**Summary of Research Results 2003**

**Barley:**

Amongst the Malting Barley varieties, *Chapais* grave the highest grain yield of 6,512 kg/ha in 97 days closely followed by *Brucefield* at 6,419 kg/ha in 96 days. Other varieties that produced yields higher than 6000 kg/ha were *CDC Sisler*, *CDC Battleford* and *H 50076-073*. *AC Vision* at 5564 kg/ha in 94 days was the earliest to mature and was the shortest (66 cm) variety.

*Chapais* at 6,987 and *Brucefield* at 6,801 kg grain yield/ha maintained their lead in a trial with the Manitoba varieties as well. *Xena*, *Robust* and *Lacey* formed the next group that yielded above 6,000 kg/ha and the rest (*CDC Stratus, AC Rosser, Conlon* and *AC Sirius* were poor in yield at less than 5,800 kg/ha.

In another experiment on *Barley* varieties, including the non-malting ones, too, *Chapais* gave the highest yield of 8,353 kg/ha in 94 days closely followed by *GB 966057-2* with 8,296 kg/ha in 96 days.

*Brucefield*, *B1602*, *Balance* and *AC Klinck* yielded higher than 8,000 kg/ha, whereas *CMB 006047*, *GB 006076*, *AC Alma*, *Sumosan*, and *OBS 4898-15* had yields between 7,700 to 8,000 kg/ha. *CFO 141AA7* was the tallest at 110 cm but had a grain yield of only 6,793 kg/ha in 96 days. *OBS 4869-7* gave 7,355 kg yield/ha in 87 days – 7 days earlier than the mean maturity days.

A comparison between the early maturing barley varieties revealed that *OB 4926-38* produced the highest yield of 8,212 kg/ha in 93 days followed by *OB 4926-37* (7,645 kg/ha), *OBS 4714-1*, *Chapais* and *OBS 4880-3* (7,027 kg/ha) in descending order.

In the Hulless varieties, *AC Klinck* gave the highest yield (7,068 kg/ha) followed by *Brucefield* (6,902 kg/ha). *AC Sterling*, *AB 255-1* and *Island* had reasonably good yields at 6,356 – 6,439 kg/ha.

Increasing the seed rate of Hulless varieties from 300 to 500 seeds/m2 increased the seed yield from 5,564 kg/ha to 5,949 kg/ha i.e. ~ 7% improvement in the yield.

In an experiment on Nitrogen management in malting barley varieties, *B1602* produced a grain yield of 6,116 kg/ha that was 906 kg/ha higher than the yield of the next best variety *AC Metcalfe*. Application of nitrogen @ 35 kg/ha significantly improved the yield over no application. However, increasing the rate of nitrogen application from 35 to 70 kg/ha tended to suppress the grain yield.

Results from the harvest management experiment showed that the grain yield declined consistently from 5,384 kg/ha at harvest on August 22 to 4,405 kg/ha at harvest on September 4 and 2,982 kg/ha at harvest on September 16. The rate of decline in yield with the delay in harvesting was faster in *B 1602* than that in *AC Metcalfe*.

From these results it appears that *Chapais*, *Brucefield*, *GB 966057-2* and *AC Klinck* could be a better choice amongst the barley varieties. These should be seeded @ 500 seeds/m2, supplied with 35 kg N/ha and harvested on/around August 22 for maximum yields. The experimental barley plots were dressed with 50 kg P2O5 and 20 kg K2O /ha. Buctril M @ 1 L/ha was applied as post-emergence for weed control.

**Canola:**

Seed yields, averaged over 5 levels of N @ 0-250 kg/ha, were higher with *Hyola* 401 (3,828 kg/ha) than that with *OAC Summit* (2,697 kg/ha) in 104 days. Highest yield of *Hyola* (4,245 kg/ha) was obtained at 200 kg N/ha and that of *OAC Summit* (3,291 kg/ha) at 50 kg N/ha. However, the data appears to be erratic and needs rechecking because *Hyola* is known for its high nutrient requirements. A basal dose of 20 kg/ha each of P2O5 and K2O was applied at sowing. Weeds were controlled by post emergence application of Muster @ 0.0112 kg/ha + Ag Surf @ 2 L/ha.

**Chickpea:**

Sixteen varieties of *Desi* and *Kabuli* gram were compared. The *Desi* type appeared to be more mature than the *Kabuli* ones after a killing frost before harvest on October 1. *AERC 168 D* produced the highest grain yield of 4,340 kg/ha, whereas *02-358 D* had the lowest yield at 1,309 kg/ha. The other varieties that exceeded 4,000 kg yield/ha were *98-111 D* and *98-128 D;* *02-399 K*, *02-172 D* and *02-458 D* were intermediate varieties with the yield ranging between 2,515-3,030 kg/ha.

Chickpeas were dressed with 40 kg N and 20 kg/ha each of P2O5 and K2O. Weeds were controlled with the post emergence application of Sencor 500 F @ 390 ml/ha.

Short duration varieties of Chickpea, that could substitute Soybean for protein, need to be tried in future.

**Oats:**

*Triple Crown* at 6,644 kg yield/ha in 92 days was the best amongst the Manitoba oat varieties. *AC Rigodon* at 6,022 kg/ha was the next best that yielded 300-1300 kg/ha higher than the other varieties (*Pinnacle*, *Ronald* and *AC Assiniboia*).

In the second variety trial, with the oats, *Triple Crown* at 5,304 kg/ha out yielded other varieties, namely *AC Hunter* (4,862 kg/ha), *OA 1019-1* (4,607 kg/ha), *AC Goslin* (4,397 kg/ha) and *OA 1021-1* (4,322 kg/ha).

In the third variety trial, with the oats, highest yield of 7,829 kg/ha was obtained with *QO.685.43* closely followed by 7,693 kg/ha with *AC Rigodon*. A number of other varieties e.g. *AC Aylmer*, *OA 1019-1*, *AC Vermont*, *AC Goslin*, *OAC Pasley* and *OA 1017-1*, listed in ascending order of yield, produced yields above 7,000 kg/ha. In another trial, *Ida* slightly out yielded *AC Aylmer*.

Triple Crown (89 cm) was the tallest and AC Goslin (66 cm) was the shortest variety.

Treatment with fungicide did not improve the yield of oats whether direct cut or swathed. Highest yields were recorded in harvesting on August 20; each 6-day successive delay in harvesting up to mid-September reduced the yield significantly, so much so that the yields in mid-September were only 65% of that at August 20.

The crop, in these experiments, received 70 kg N, 50 kg P2O5 and 20 kg K2O /ha. Buctril M @ 1 L/ha was applied as post emergence to control weeds.

*Triple Crown*, *QO.685.43* and *AC Rigodon* seem to be better suited for cultivation at Thunder Bay as compared to the other varieties. *QO.685.43* should however be re-evaluated for its consistency in yield superiority over *AC Rigodon*. For maximum yields, the crop could be raised without fungicides spray and should be harvested on August 20.

**Forage Sorghum and Pearlmillet:**

*CFSH 53* gave the best first cut forage yield of 5,292 kg/ha closely followed by 5,237 kg/ha with *CFSH 30*. The latter had the highest second cut forage yield of 5,712 kg/ha. The next best variety, *CFSH 33*, in second cut recorded only 4,828 kg forage yield/ha.

Highest total (first + second cut) forage yield (10,950 kg/ha) was produced by *CFSH 30* followed by 9,379 kg/ha with *CFSH 53*. *US Sudan*, *CFSH 50* and *GFSH 33* more or less equaled in their total forage yield (8,924-8,928 kg/ha).

The Fodder crops received 80 kg N, and 20 kg each of P2O5 and K2O. Pardner @ 1 L/ha was applied post emergence to control weeds.

Mixed stands of *CFSH 53* and *CFSH 30* may be tried in future studies to lend stability to both first and second cut forage yields. Application of farmyard manure and growth hormones need to be tried to improve the second cut yield of *CFSH 53*.

**Soybean:**

A comparison of bin run and certified seed varieties of Soybean no significant difference in grain yield of different varieties was observed. However, *Bolt Gaillard*, *Gaillard Certified*, *OAC Vision* Certified and *Hanna Vision*, at 2,718-2,996 kg/ha, had 600-870 kg/ha higher yield than *Mol-Gaillard*. Bolt, Hanna and Mol indicate farmers from whom the bin run seed was collected.

In another (varieties’) comparison, *OAC Walton* gave the highest yield of 3,267 kg/ha in 126 days. The runner up ‘*Gentleman*’ was at 2,945 kg/ha. Yield of other varieties, *AC Orford*, *GG-469*, *Jim* and *Gaillard* ranged between 2,400-2,500 kg/ha.

*Gaillard* at 3,038 kg/ha was exceeded in yield by all Soybean varieties from Quebec, for example *PR 0131*, *S 6326.22*, *SEMS 99-21.33* and *S 6312.41*. *PR 0131* at 3,471 kg/ha and *S 6326.22* at 3,463 kg/ha, in 122 days, topped in the grain yield of Soybean. In another experiment, *GS 1000*, *OAC Vision*, *Gaillard* and *Gentleman* had no significant differences in their yields, even though, *GS 1000* was at the top (3,070 kg/ha) and ‘*Gentleman*’ at the bottom (2,789 kg/ha) of the list.

Neither the inoculant nor the application of N improved the Soybean yield. Nitrogen tended to reduce *Gaillard* yield, whereas both the inoculant and N appeared to have an adverse effect on the yield of *OAC Vision*.

In a demonstration trial on Herbicides, highest yield of 3,120 kg Soybean/ha was recorded in 119 days, with Viper/Reflex/Agsur/UAN. The other herbicides/formulations such as Viper/Basagran Forte/UAN (3,042 kg/ha), Pursuit (3038 kg/ha), Reflex/Pinnacle/Assure II/Suremix (3014 kg/ha) and Broadstrike Dual Magnum (3,003 kg/ha) appeared to be equally effective. Weed control in Soybeans is therefore not a problem.

The crop was supplied with 20 kg each of P2O5 and K2O at sowing.

In the future studies on Soybean varieties, Quebec varieties, especially *PR 0131* and *S 6326.22* need to be compared with *Gentleman*, *OAC Walton*, and *Gaillard* to reconfirm their superiority with the prevalent varieties at Thunder Bay. Optimum doses of Phosphorus and Sulphur also need to be worked out for Soybean, which seem to have potential for the area.

**Switch Grass:**

In a good year (2002), *Care in the Rock* gave the highest yield of 11,630 kg/ha and had an edge over the next best *Sunburst* at 10,110 kg/ha. However, in a bad year (2003), *Sunburst* gave 550 kg/ha (21%) higher yield than *Care in the Rock*. *Forest Burg* and *Dacotah* as also other varieties produced higher yields than *Vintage Reed Canary* (7,049 kg/ha in 2002 and 6,171 kg/ha in 2003) only in a good year i.e. 2002. Unfavourable weather reduced the yield of *Vintage Reed Canary* only by about 15%, whereas the yield reduction due to bad weather in the other varieties was up to 70-75%.

The grasses were supplied with 20 kg each of P2O5 and K2O.

The results suggest that a portion of the farmland should always be covered with *Vintage Reed Canary* to cover the risk of bad weather.

**Wheat:**

Spring wheat showed good potential at Thunder Bay. The grain yields, with mean maturity days of 101, ranged from 5,088 kg/ha with *Alsen* to 7,865 kg/ha with *QW 628.5*. *Fundy* was the second best at 7,235 kg/ha. *BB 9:5:52:1059* produced grain yields of 6500-7000 kg/ha.

The crop was applied with 70 kg N, 50 kg P2O5 and 40 kg K2O/ha.

The experiment with selected wheat varieties should be repeated in the spring of 2004.

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