

LUARS Research Results 2018 – High Yielding Varieties

Dr. Tarlok Singh Sahota CCA

Good genetics is one of the prime factors for improving/and sustaining crop yields. This note highlights key points from our crop(s) variety evaluation tests.

Wheat:

- Thirty five varieties were evaluated; 9 of durum wheat and the rest mostly hard red.
- Two varieties that gave >10 MT/ha grain yield were *AAC Chiffon* (soft white; 10.6 MT/ha) and *Easton* (HRS; 10.3 MT/ha). Second best group of varieties in grain yield was *AC Foray VB* (CPRS; 8,756 kg/ha), and *Furano* (HRS; 8,075 kg/ha).
- *AAC Penhold* (CPSR; year 2016's highest yielding variety), cultivated on farms in Thunder Bay, at 7,654 kg grains/ha, gave 2,665 kg/ha less grain yield than *Easton* this year!
- Highest straw (11.9 MT/ha) and biomass (22.2 MT/ha) yields were obtained with *Easton*.
- Among the durum wheat varieties, *CDC Alloy* recorded the highest grain yield (6,801 kg/ha), *AAC Raymore* the highest straw yield (9,853 kg/ha) and *Enterprise* the highest biomass yield (15,868 kg/ha).
- Averaged over three years (2016-'18), highest grain (8,687 kg/ha), straw (9,701 kg/ha) and biomass (18.4 MT/ha) yields were obtained with *Easton*! *AAC Chiffon* (7,551 kg/ha) and *SY Rowyn* (7,334 kg/ha) were the next best varieties in grain yield.
- Grain protein content in the high yielding varieties was; *Furano* 16.6 %, *AAC Penhold* and *Minnedosa* 15.6 %, *Easton* 14.4 %, and *AAC Chiffon* 13.6 %.

Barley:

- Seventeen barley varieties (5 two row and 12 six row) were compared for their production potential.
- Three top grain yielding varieties were *Chambly* (7,586 kg/ha), *Oceanik* (~7,000 kg/ha) and *Rhea* (6,784 kg/ha).
- *Encore* (6,694 kg/ha), *Austenson* (6,612 kg/ha) and *Boroe* (6,567 kg/ha) formed the second best group in grain yield. *Boroe* has been the highest yielding variety during 2016 and 2017.
- Straw yield was highest with *Rhea* (8,583 kg/ha); followed by *Encore* (7,572 kg/ha) and *Chambly* (7,362 kg/ha).
- Averaged over 2016-'18, three top grain yielding varieties were *Chambly* (6,949 kg/ha), *Boroe* (6,783 kg/ha) and *Oceanik* (6,421 kg/ha). *Encore* (6,378 kg/ha), *Chambly* (6,211 kg/ha) and *Rhea* (6,125 kg/ha) were the best for straw production!

Malting Barley:

- Ten varieties were evaluated. *New Dale* was almost a failure; hence the results are reported for 9 varieties only.
- *CDC Bow* produced the highest grain (7,854 kg grains/ha), straw (11,424 kg/ha) and biomass yield (19.3 MT/ha). Grain yield from *CDC Bow* was ~800 kg/ha higher than that from than *AAC Synergy* (7,074 kg/ha); one time the best (yielding) variety.
- *CDC Kindersley* (7,699 kg grains/ha) and *CDC Copeland* (7,586 kg grains/ha), were not far behind *CDC Bow* in grain yield. However, the straw yield from these two varieties was significantly lower than that from *CDC Bow*.

- Grain yield of other varieties ranged from 5,924 kg/ha (*Lowe*) to 7,478 kg/ha in AAC Connect.
- Averaged over three years (2016-'18), *CDC Bow* maintained its supremacy over other varieties in grain, straw and biomass yield.

Hulless Barley and Oat (Demonstration - Single Replication):

- Among three hulless barley varieties *AAC Azimuth* gave the highest grain yield (6,183 kg/ha). Grain yield of *Black Barley* was very low (2,052 kg/ha).
- The two hulless oat varieties (*Navaro* and *Gehl*) had similar grain yields (~3,800 kg/ha).

Black (Hulless) Barley is a specialty crop and can be eaten like rice (boiled)! It may be of interest to gardeners/and organic producers.

Oat:

- Twenty three oat varieties were evaluated for their yield potential.
- *Akina* (milling oat) produced the highest grain (8,882 kg/ha) and biomass (17,347 kg/ha) yields. Highest straw yield (9,338 kg/ha) was obtained with *Bolina* (also milling oat) that had low grain yield (6,278 kg/ha).
- *AAC Bullet* (8,072 kg/ha) and *OA 1367-3* (8,001 kg/ha) were the second best group of varieties with good grain yields!
- *AAC Noranda* was reasonably good in both grain (7,378 kg/ha) and straw (9,034 kg/ha) yields!
- Grain yields of *AC Rigodon* and *AC Jordon*, formerly high yielding varieties with stable yields till 2015, were 6,426 and ~6,600 kg/ha only.

Winter Wheat (seeded on August 23, 2107):

- Nine winter wheat varieties from the west and east of Canada, including *Gallus*, *AAC Elevate* and *AAC Wildfire*, were compared for their production potential.
- *Moats* recorded the highest grain (8,518 kg/ha), straw (~10,000 kg/ha) and biomass yields (18,500 kg/ha).
- *AAC Gateway* with grain, straw and biomass yields of 6,541 kg/ha, 7,250 kg/ha and 13,792 kg/ha, respectively, was the next best variety.
- *Gallus* and *Keldin*, the two Ontario varieties, had a total winter kill and hence no yield data could be obtained from these varieties.

Late seeded Winter Wheat (seeded on September 23, 2107):

- *JDC 78* and *AAC Goldrush*, two new varieties, were compared with two old varieties (*Gallus* and *AAC Gateway*).
- *AAC Gateway* gave the highest grain yield (7,819 kg/ha) and *JDC 78* the highest straw (10,626 kg/ha) and biomass (17,905 kg/ha) yields; though not significantly higher than that from *AAC Gateway*.

Winter Rye and Lime/Wood Ash:

- Four winter rye varieties were evaluated.
- *Hazlet* (11,086 kg/ha) recorded the highest and *Brasetto* (4,328 kg/ha) the lowest grain yield. This was a reflection of winter survival; highest (81 %) in *Hazlet* and lowest (25 %) in *Brasetto*.
- Grain yield of *Guttino* was ~9,000 kg/ha and that of *Bono* was ~8,000 kg/ha.
- Neither wood ash nor lime applied three years ago improved grain yield of winter rye.
- *Winter rye could be a good option for grain (feed or malt)/and straw production!*

Grain Corn:

- Nine corn varieties (3 from DuPont Pioneer, 2 from Pride Seeds, 3 from Maizex and 1 from Brett & Young) were evaluated for grain production.
- Grain yield ranged from 7.62 MT/ha (*P7211HR – 2050 CHU*) to ~22.0 MT/ha (*E44H12 R – 2100 CHU*); the latter gave consistently high grain yield during the past years (2016 and 2017) too.
- *P7005AM* (2000 CHU - 19.0 MT/ha) and *MZ 1340DBR* (2150 CHU – 18.0 MT/ha) stood next to *E44H12 R (2100 CHU)* in grain yield.
- Stover yield was highest (16.1 MT/ha) with *P7005AM* followed closely by *E44H12 R* (15.8 MT/ha) and *MZ 1340DBR* (15.2 MT/ha).

Soybean:

- Thirteen varieties were evaluated for grain production.
- *Lono R2* gave the highest gain yield (4,543 kg/ha). Three other varieties with good grain yields were *Sunna R2X* (3,913 kg/ha), *Pekko R2* (3,886 kg/ha) and *NSC Sperling RR2Y* (3,860 kg/ha).
- Grain yield in other varieties ranged from 2,562 kg/ha (*NSC Moosomin RR2Y*) to 3,688 kg/ha (*NSC Starbuck RR2Y*).
- Based on two to three years' (2016-'18) average grain yields, three top yielding varieties were *NSC Watson RR2Y*, *Podago R2*, and *Pekko R2* (4,000 kg/ha or more).

Edible Beans:

- Six white and 2 red edible bean varieties were compared for their grain yield.
- Only three varieties produced nearly 3 or more than 3 MT grain yield/acre; *Fathom* (3,010 kg/ha), *Earlired* (2,900 kg/ha) and *Lighthouse* (2,870 kg/ha).
- Based on three years average (2016-'18), *Earlired* at 3,162 kg/ha maintained its lead in grain yield. *Yeti* (2,872 kg/ha) and *Bolt* (2,670 kg/ha) were the next best varieties.

Edible beans could be an integral part of the cropping systems in northwestern Ontario!

Flax:

- Six varieties were evaluated for their production potential.
- Varieties that gave >2,500 kg/ha seed yield were: *CDC Glas* (2,750 kg/ha), *Prairie Sapphire* (2,589 kg/ha), *CDC Sorrel* (2,532 kg/ha) and *CDC Plava* (2,527 kg/ha).
- Straw yield was highest with *CDC Sorrel* (5,255 kg/ha); followed closely by *CDC Plava* (5,169 kg/ha) and *CDC Buryu* (5,039 kg/ha). Straw yield of *CDC Glas* was 4,669 kg/ha.
- Highest biomass yield (7.8 MT/ha) was obtained with *CDC Sorrel*.

Linseed Flax Co-op Trial:

- Twenty six biotypes were compared; including 12 standard/named varieties.
- In the standard varieties, three varieties that gave >3,300 kg/ha seed yield were: *CDC Glas* (3,581 kg/ha), *CDC Buryu* (3,394 kg/ha) and *AAC Bright* (3,393 kg/ha).
- In the new lines, seed yield ranged from 2,873 kg/ha (*FP2566*) to 3,504 kg/ha (*FP2585*).
- Flax is relatively a low input crop and could be added to diversify the existing cropping systems!

Liberty Canola:

- Seven varieties were evaluated.
- *L241C*, a Club Root resistant variety, recorded the highest seed yield (6,050 kg/ha); 582-658 kg/ha more than *L233C* and *L252*. Straw (~10 MT/ha) and biomass (16 MT/ha) yields were also highest with *L241C*!

- Seed yield from other varieties ranged from 4,268 kg/ha (L255PC) to 5,363 kg/ha (L230).
- P stands for ‘Shatter Reduction’ and C for Club Root resistance.
- *Due to expected threat from Club Root in Ontario, LUARS would recommend L241C for cultivation on farms.*

Round Up Ready/Clearfield Canola:

- Four varieties were compared.
- Seed yield from two varieties (6086 CR and 5545 CL) was ~4,300 kg/ha and 3,842/3,943 kg/ha from the other two varieties (6074 RR/6080 RR). Round Up wasn’t sprayed to avoid drift to Clearfield variety plots and weed control with Rival didn’t seem to be all that effective. This may account for relatively low seed yield from RR canola varieties.
- Straw yield was in the order of 6074 RR (8,043 kg/ha) ≥ 5545 CL (7,832) > 6086 CR (7,331 kg/ha) > 6080 RR (~6,000 kg/ha).

Mustard:

- AC 200 (Oriental mustard) recorded the highest seed (1791 kg/ha), straw (3,775 kg/ha) and biomass yields (5,566 kg/ha). Straw yield from *Adagio* (Yellow; 3,682 kg/ha) equaled that from AC 200.
- Seed yields from AC *Vulcan* and - Oriental mustard and *Adagio* - Yellow mustard were 1,346 kg/ha and 1,191 kg/ha, respectively.
- Compared to canola, mustard is a low input crop, is used for culinary purposes, can be sold in retail and fetches higher market price than canola!

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