

SASKATCHEWAN SUNFLOWER COMMITTEE

CO-OPERATIVE TRIALS

2011

TEST RESULTS

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2011**

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SASKATCHEWAN SUNFLOWER COMMITTEE CO-OPERATIVE TRIALS

The Saskatchewan Sunflower Committee is organized under the authority of the Non-Profit Corporations Act of the Province of Saskatchewan. The Committee is voluntary and not organized for financial gain and declares no dividends. The Saskatchewan Sunflower Committee was formed in 1983 to test varieties that may be suitable for growing conditions in the Province.

The Committee publishes an annual summary of test results. Varieties that are registered for production in Canada and that are tested in Saskatchewan Sunflower Committee Trials are entered in the Varieties of Grain Crops for Saskatchewan annual publication. All sites were arranged in randomized complete block designs. Oil content was done by Nuclear Magnetic Resonance (Bruker minispec) on samples that were dried to less than 4% moisture.

In 2011 the entries were grown in a single trial with a target plant population of 55,000 -60,000 plants per hectare (22,000 to 24,000 plants per acre). AC Sierra had a target population of 110,000 plants per hectare (45,000 plants per acre). 63A21 the check was grown at both target densities.

In 2011, the experiment was to be conducted at 7 locations, Indian Head, Canora, Swift Current, Redvers Melfort, Tribune and Saskatoon. However, excess moisture prevented any attempt at seeding the trial at Tribune and Canora. At Redvers the plots were laid out but further work was stopped by more rainfall. Plots were seeded with no-till plot drills at Indian Head and Swift Current. At Saskatoon and Melfort a small plot disk drill was used to seed into tilled land William May Agriculture & Agri-Food Canada, Indian Head, coordinated all tests.

Plots were seeded with no-till plot drills at Indian Head and Swift Current. At Saskatoon a small plot disk drill was used to seed into tilled land. The plot size was approximately 35' x 12', depending on the seeding tool. The fertility added was 70 kg/ha of nitrogen, and P, K and S based on soil test recommendations for each specific site.

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Melfort
Saskatoon
Indian Head
Canora
Tribune
Redvers

Results and Discussion

In 2011 excess moisture prevented plots from being seeded at Tribune, Redvers and Canora. In 2010, excess moisture reduced plant stands at Tribune and delayed seeding at Canora until very late into the spring. In 2011 there was very little bird damage while in 2010 bird damage occurred to the earliest lines, AC Sierra and 63A21, at Tribune. Therefore, the yield data from these two lines was not included at Tribune in 2010. In 2011, the seed vigour of Defender Plus was low resulting in very low stands and grain yield. In 2010, AC Sierra had a much lower vigour and germination than expected and its grain yield was not included since it would be misleading of the cultivars potential.

The overall performance of the cultivars in both years is presented in Table 2. The long term yields for 63A21 are presented in table 3. The performance of the hybrids across three locations in 2011 is presented in Table 4. Hybrid 63A21 consistently ranked near the top for grain yield (Table 3). This hybrid consistently reaches maturity in a shorter number of days than most of the other lines except AC Sierra (Tables 2 and 6) and has a low kernel moisture at harvest (Tables 2 and 10) The Hybrid 63A21 is a traditional oil sunflower that has been tested in Saskatchewan since 1998. Most of the market is moving to a Nusun oil profile and new hybrids with this profile are required. In 2011 two of the hybrids tested 803 and 2930 look to be close in maturity and kernel moisture at harvest to 63A21. The yield of 803 and 2930 were similar to 63A21 at Indian Head and Melfort (Table 3). These hybrids are the most promising new hybrids for production across most of Saskatchewan. The other hybrids appear to be limited to the warmer regions of the province. In addition the higher seeding density in 63A21 tended to increase yield and shorted maturity. In 2011 available moisture was above average through the growing season. Therefore some caution must be taken in using this information until more data can be collected in the coming years.

Table 1. Entries in the 2010 and 2011 Saskatchewan Sunflower Committee Trials

| Hybrid | Oil Type | 2010 | 2011 | Herbicide tolerance | Breeder | Distributor |
|-----------------|-----------------|-------------|-------------|----------------------------|------------------|--------------------|
| 63A21 | Traditional | x | x | | Pioneer Hi-Bred | Pioneer Hi-Bred |
| 803 DMR NS | NuSun | x | x | | Croplan Genetics | Croplan Genetics |
| 306 DMR,NS | NuSun | x | x | | Croplan Genetics | Croplan Genetics |
| 3080 DMR,NS | NuSun | x | | | Croplan Genetics | Croplan Genetics |
| 2930 NS/DM | NuSun | x | x | | Syngenta | Syngenta |
| 3433 NS/DM | NuSun | x | | | Syngenta | Syngenta |
| 3480 NS/C1/DM | NuSun | x | | Clear field | Syngenta | Syngenta |
| 7120 HO/DM | High Oleic | x | x | | Syngenta | Syngenta |
| 8N270 CLDM | NuSun | x | x | Clear field | Mycogen Seeds | Mycogen Seeds |
| Defender plus | NuSun | x | x | | Seeds 2000 | Seeds 2000 |
| Cultivar | | | | | | |
| AC Sierra | Traditional | x | x | | AAFC | AAFC |

Table 2: Performance of hybrids and cultivars averaged across Saskatchewan in 2010 and 2011

| | <u>Grain Yield</u> | | <u>Days to First Bloom</u> | | <u>Maturity</u> | | <u>Kernel moisture at Harvest</u> | | <u>Kernel weight</u> | | <u>Height</u> | | <u>Plant density</u> | | <u>Test weight</u> | | <u>Oil</u> | |
|---|--------------------|------|----------------------------|------|-----------------|-------|-----------------------------------|------|----------------------|------|---------------|-------|--------------------------|-------|--------------------|-------|------------|------|
| | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 | 2010 | 2011 |
| | (kg/ha) | | (days) | | (days) | | (%) | | (g/ 1000 kernels) | | (cm) | | Plant acre ⁻¹ | | (g/0.5L) | | (%) | |
| 63A21 (11.1 plants m ⁻²) | 3032 | 1605 | 73 | 70 | 117.1 | 114.2 | 18.8 | 19.3 | 52.3 | 44.4 | 161.7 | 128.2 | 46907 | 40490 | 179.9 | 180.2 | 38.6 | 38.6 |
| AC Sierra | NA | 1089 | 70.6 | 64.8 | 111.6 | 110 | 21.7 | 13.5 | 72.4 | 52.8 | 116.9 | 116.1 | 15237 | 27021 | 188.4 | 195.2 | NA | 42.1 |
| 803 DMR NS | 2395 | 1322 | 79.6 | 75.8 | 119.9 | 117.2 | 19.7 | 19.1 | 49.1 | 45.5 | 159 | 139.3 | 26081 | 19413 | 178.9 | 174.2 | 40.8 | 39.5 |
| 306 DMR,NS | 2766 | 1330 | 83.6 | 76.9 | 125.4 | 121.1 | 26.9 | 28.3 | 54.6 | 48.7 | 167.2 | 144.5 | 25690 | 23667 | 174.8 | 175.4 | 40.2 | 40.1 |
| 2930 NS/DM | 2689 | NA | 82.1 | 76.7 | 120.7 | 119.2 | 22.7 | 21.7 | 50 | 48.4 | 166.2 | 140.8 | 25962 | 15169 | 175.7 | 171.9 | 39.5 | 37.5 |
| 7120 HO/DM | 2384 | 1230 | 83.6 | 77.2 | 127.4 | 121.1 | 25.5 | 30.7 | 53.1 | 55.4 | 161.3 | 140.3 | 26846 | 17450 | 173.2 | 171.9 | 39.7 | 38.1 |
| 8N270 CLDM | 2851 | 1405 | 80.8 | 74.8 | 121.8 | 116.9 | 28.7 | 26.4 | 53.7 | 50 | 169.3 | 140.5 | 26506 | 20774 | 189.5 | 183.3 | 41.3 | 39 |
| Defender plus | 2754 | NA | 82.9 | 79.4 | 120.2 | 118.7 | 26 | NA | 57.3 | NA | 166.2 | 120.2 | 24899 | 9111 | 177.4 | NA | 37.3 | NA |
| 63A21* (6 plants m ⁻²) | 2709 | 1284 | 73.3 | 69.8 | 117.9 | 115 | 23.2 | 25.6 | 58.1 | 50.8 | 150.2 | 126.7 | 30599 | 23752 | 175.4 | 178 | 38 | 37.7 |
| lsd0.05 | 676 | 263 | 2.5 | 2.3 | 2.2 | 1.6 | 7.5 | 6.8 | 5.5 | 4.7 | 10.1 | 12.5 | 6416 | 4790 | 7.1 | 6.3 | 0.8 | 1.2 |

Table 3: Comparison of Multi-Year Entries in Saskatchewan

| | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2010 |
|---------------------------------------|------|------|------|------|------|------|------|------|------|------|------|--------|
| <u>Yield (kg/ha)</u> | | | | | | | | | | | | |
| 63A21 | 2030 | 1749 | 2271 | 2183 | 2392 | 1612 | 2169 | 2365 | 3485 | | 3090 | 3032.0 |
| AC Sierra | | | | | | | | | | 1882 | 1657 | |
| Defender plus | | | | | | | | | | 3551 | | 2753.8 |
| <u>Oil (%)</u> | | | | | | | | | | | | |
| 63A21 | 50.2 | 45.4 | 45.4 | 49 | 46.1 | 48.4 | 48.6 | 43.7 | 45.1 | | 45 | |
| AC Sierra | | | | | | | | | | 47.7 | 48.3 | |
| Defender plus | | | | | | | | | | 45.2 | | |
| <u>Maturity (Days)</u> | | | | | | | | | | | | |
| 63A21 | 111 | 111 | 117 | 116 | 114 | 113 | 128 | 116 | 111 | | 110 | 117.1 |
| AC Sierra | | | | | | | | | | 104 | 105 | |
| Defender plus | | | | | | | | | | 120 | | 120.2 |
| <u>Bushel weight (lb/acre)</u> | | | | | | | | | | | | |
| 63A21 | | 29.8 | 30.5 | 32.2 | 28 | 38.4 | 31.3 | 31.2 | 31.1 | | 32.6 | 28.7 |
| AC Sierra | | | | | | | | | | 34.4 | 33.5 | 30.1 |
| Defender plus | | | | | | | | | | 34.3 | | 28.4 |

Table 4: Performance of hybrids and cultivars averaged across 4 locations in Saskatchewan in 2011

| | Grain Yield | Days to First Bloom | Maturity | Kernel moisture at Harvest | Kernel weight | Height | Lodge | Plant density | | Test weight | | Oil |
|--------------------------------|--------------------|----------------------------|-----------------|-----------------------------------|----------------------|---------------|--------------|--------------------------|-----------------------|--------------------|------------------------|------------|
| | (kg/ha) | (days) | (days) | (%) | (g/ 1000 kernels) | (cm) | (0-10) | Plant acre ⁻¹ | Plant m ⁻² | (g/0.5L) | (kg hl ⁻¹) | (%) |
| 63A21 | | | | | | | | | | | | |
| (11.1 plants m ⁻²) | 1605.36 | 70.0 | 114.2 | 19.3 | 44.4 | 128.2 | 1.56 | 40490 | 10.0 | 180.2 | 36.0 | 38.6 |
| AC Sierra | 1088.98 | 64.8 | 110.0 | 13.5 | 52.8 | 116.1 | 1.50 | 27021 | 6.7 | 195.2 | 39.0 | 42.1 |
| 803 DMR NS | 1322.43 | 75.8 | 117.2 | 19.1 | 45.5 | 139.3 | 1.31 | 19413 | 4.8 | 174.2 | 34.8 | 39.5 |
| 306 DMR,NS | 1329.54 | 76.9 | 121.1 | 28.3 | 48.7 | 144.5 | 1.25 | 23667 | 5.8 | 175.4 | 35.1 | 40.1 |
| 2930 NS/DM | NA | 76.7 | 119.2 | 21.7 | 48.4 | 140.8 | 1.31 | 15169 | 3.7 | 171.9 | 34.4 | 37.5 |
| 7120 HO/DM | 1229.7 | 77.2 | 121.1 | 30.7 | 55.4 | 140.3 | 1.31 | 17450 | 4.3 | 171.9 | 34.4 | 38.1 |
| 8N270 CLDM | 1404.94 | 74.8 | 116.9 | 26.4 | 50.0 | 140.5 | 1.44 | 20774 | 5.1 | 183.3 | 36.7 | 39.0 |
| Defender plus | NA | 79.4 | 118.7 | NA | NA | 120.2 | 1.44 | 9111 | 2.3 | NA | NA | NA |
| 63A21* | | | | | | | | | | | | |
| (6 plants m ⁻²) | 1284.43 | 69.8 | 115.0 | 25.6 | 50.8 | 126.7 | 1.63 | 23752 | 5.9 | 178.0 | 35.6 | 37.7 |
| lsd0.05 | 262.5 | 2.3 | 1.6 | 6.8 | 4.7 | 12.5 | 0.19 | 4790 | 1.2 | 6.3 | 1.3 | 1.2 |

Table 5: Seed Yield of hybrids and cultivars at 4 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Saskatoon | Swift Current |
|--------------------------------------|--------------------|----------------|------------------|----------------------|
| | | | (kg/ha) | |
| 63A21 (11.1 plants m ⁻²) | 708.3 | 1870.8 | 2050.8 | 1791.55 |
| AC Sierra | 297.6 | 1445.8 | 1725.9 | 762.28 |
| 803 DMR NS | 506.9 | 2112.5 | 1317.8 | 1352.55 |
| 306 DMR,NS | 660.5 | 1680.9 | 1514.9 | 1461.9 |
| 2930 NS/DM | 652.1 | 2021.6 | 1318.5 | NA |
| 7120 HO/DM | 370.7 | 1390.6 | 1531 | 1564.94 |
| 8N270 CLDM | 567.1 | 1975.4 | 1923.3 | 1153.93 |
| Defender plus | 310.8 | 1658.1 | 888.8 | NA |
| 63A21 (6 plants m ⁻²) | 600.6 | 1540.4 | 1704.4 | 1219.6 |
| lsd 0.05 | 252.36 | 577 | 367.8 | 505.115 |

* NA – not available

Table 6: Test Weight of hybrids and cultivars at 4 locations in Saskatchewan in 2011

| | Indian Head | Melfort | Saskatoon | Swift Current |
|--------------------------------------|--------------------|----------------|------------------|----------------------|
| | | | (g/0.5L) | |
| 63A21 (11.1 plants m ⁻²) | 186.45 | 194.878 | NA | 159.393 |
| AC Sierra | 207.9 | 209.47 | NA | 166.926 |
| 803 DMR NS | 175.58 | 187.215 | NA | 159.88 |
| 306 DMR,NS | 168.9 | 197.59 | NA | 159.58 |
| 2930 NS/DM | 172.65 | 193.403 | NA | 148.704 |
| 7120 HO/DM | 164.1 | 198.898 | NA | 153.176 |
| 8N270 CLDM | 185.8 | 200.575 | NA | 163.565 |
| Defender plus | 169 | 197.28 | NA | NA |
| 63A21 (6 plants m ⁻²) | 187.6 | 193.423 | NA | 153.337 |
| lsd 0.05 | 7.574 | 10.5 | NA | 11.9 |

* NA – not available

Table 7: Kernel weight of hybrids and cultivars at 4 locations in Saskatchewan in 2011

| | Indian Head | Melfort | Saskatoon | Swift Current |
|--------------------------------------|--------------------------|----------------|------------------|--------------------------|
| | (g/ 1000 kernels) | | | |
| 63A21 (11.1 plants m ⁻²) | 37.995 | 42.51 | NA | 52.82 |
| AC Sierra | 40.61 | 52.42 | NA | 64.31 |
| 803 DMR NS | 33.775 | 47.06 | NA | 55.54 |
| 306 DMR,NS | 31.975 | 52.75 | NA | 61.48 |
| 2930 NS/DM | 37.175 | 45.46 | NA | 62.22 |
| 7120 HO/DM | 37.365 | 55.41 | NA | 72.88 |
| 8N270 CLDM | 41.40001 | 52.34 | NA | 56.25 |
| Defender plus | 41.42001 | 61.7 | NA | NA |
| 63A21 (6 plants m ⁻²) | 41.41501 | 50.71 | NA | 59.88 |
| lsd0.05 | NS | 6.8 | NA | 8.3 |

* NA – not available

Table 8: Maturity of hybrids and cultivars at 4 locations in Saskatchewan in 2011

| | Indian Head | Melfort | Saskatoon | Swift Current |
|--------------------------------------|------------------------|----------------|------------------|----------------------|
| | (Days) | | | |
| 63A21 (11.1 plants m ⁻²) | 112.0 | 118 | NA | 112.5 |
| AC Sierra | 109.0 | 113.8 | NA | 107.4 |
| 803 DMR NS | 113.0 | 122.3 | NA | 116.3 |
| 306 DMR,NS | 116.0 | 129 | NA | 118.3 |
| 2930 NS/DM | 114.8 | 124.5 | NA | 118.3 |
| 7120 HO/DM | 116.5 | 128.3 | NA | 118.5 |
| 8N270 CLDM | 113.3 | 122 | NA | 115.5 |
| Defender plus | 115.3 | 122 | NA | 118.8 |
| 63A21 (6 plants m ⁻²) | 112.0 | 119.8 | NA | 113.4 |
| lsd 0.05 | | 2.9 | NA | 3.3 |

* NA – not available

Table 9: Days to First Bloom of hybrids and cultivars at 4 locations in Saskatchewan in 2011

| | Indian Head | Melfort | Saskatoon | Swift Current |
|--------------------------------------|-------------|---------|-----------|---------------|
| | (Days) | | | |
| 63A21 (11.1 plants m ⁻²) | 78 | 67 | 65.5 | NA |
| AC Sierra | 71 | 63 | 61.0 | NA |
| 803 DMR NS | 84 | 74 | 69.5 | NA |
| 306 DMR,NS | 85 | 76 | 69.3 | NA |
| 2930 NS/DM | 84 | 77 | 69.0 | NA |
| 7120 HO/DM | 86 | 76 | 69.3 | NA |
| 8N270 CLDM | 84 | 75 | 65.5 | NA |
| Defender plus | 86 | 77 | 69.4 | NA |
| 63A21 (6 plants m ⁻²) | 77 | 66 | 65.3 | NA |
| lsd0.05 | 1.8 | 2 | 1.6 | NA |

* NA – not available

Table 10: Plant Height of hybrids and cultivars at 4 locations in Saskatchewan in 2011

| | Indian Head | Melfort | Saskatoon | Swift Current |
|--------------------------------------|-------------|---------|-----------|---------------|
| | (cm) | | | |
| 63A21 (11.1 plants m ⁻²) | 117.4 | 141 | 126.3 | NA |
| AC Sierra | 109.1 | 125.5 | 113.8 | NA |
| 803 DMR NS | 133.4 | 157 | 127.5 | NA |
| 306 DMR,NS | 130.6 | 165.3 | 137.5 | NA |
| 2930 NS/DM | 140.8 | 157 | 124.5 | NA |
| 7120 HO/DM | 144 | 152 | 125 | NA |
| 8N270 CLDM | 130.4 | 156.3 | 135 | NA |
| Defender plus | 128.1 | 150 | 106.3 | NA |
| 63A21 (6 plants m ⁻²) | 122.9 | 138.8 | 117.5 | NA |
| lsd 0.05 | 16.4 | 12.1 | 14.9 | NA |

* NA – not available

Table 11: Plant density of hybrids and cultivars at 4 locations in Saskatchewan in 2011

| | Indian Head | Melfort | Saskatoon | Swift Current |
|--------------------------------------|------------------------------|----------------|------------------|----------------------|
| | (plants acre ⁻¹) | | | |
| 63A21 (11.1 plants m ⁻²) | 50041.1 | 32992.1 | 34904 | 44074.86 |
| AC Sierra | 46928.2 | 24615.1 | 24484 | 12020.42 |
| 803 DMR NS | 20545.7 | 18858.4 | 18211 | 20034.03 |
| 306 DMR,NS | 30896.3 | 20426.6 | 20234 | 23039.14 |
| 2930 NS/DM | 23969.9 | 15712 | 13456 | 7512.76 |
| 7120 HO/DM | 21946.5 | 18322.2 | 17604 | 12020.42 |
| 8N270 CLDM | 21401.7 | 20952.7 | 21145 | 19533.17 |
| Defender plus | 7315.5 | 16238.1 | 7790 | 5008.508 |
| 63A21 (6 plants m ⁻²) | 31363.3 | 19900.5 | 19121 | 23039.13 |
| lsd 0.05 | 6191.02 | 7070 | 5207 | 15382.69 |

Table 12: Kernel moisture at harvest of hybrids and cultivars at 4 locations in Saskatchewan in 2011

| | Indian Head | Melfort | Saskatoon | Swift Current |
|--------------------------------------|--------------------|----------------|------------------|----------------------|
| | (%) | | | |
| 63A21 (11.1 plants m ⁻²) | 8.434712 | 36.6 | NA | 12.90614 |
| AC Sierra | 7.719773 | 21.28 | NA | 12.35359 |
| 803 DMR NS | 10.19929 | 32.28 | NA | 14.82756 |
| 306 DMR,NS | 10.31527 | 45.85 | NA | 28.75075 |
| 2930 NS/DM | 9.955654 | 27.5 | NA | 28.93883 |
| 7120 HO/DM | 10.95181 | 46.2 | NA | 34.29544 |
| 8N270 CLDM | 10.33476 | 40.05 | NA | 28.94147 |
| Defender plus | 12.43145 | 40.25 | NA | NA |
| 63A21 (6 plants m ⁻²) | 9.237928 | 46.83 | NA | 20.26773 |
| lsd 0.05 | 1.7 | NS | NA | 6.1 |

* NA – not available

Table 13: Oil content of hybrids and cultivars at 4 locations in Saskatchewan in 2011

| | Indian Head | Melfort | Saskatoon | Swift Current |
|---|------------------------|----------------|------------------|--------------------------|
| (% at 10% moisture) | | | | |
| 63A21 (11.1 plants m ⁻²) | 41.4 | 39.2 | NA | 35.1 |
| AC Sierra | 45.8 | 44.9 | NA | 35.5 |
| 803 DMR,NS | 40.0 | 41.9 | NA | 36.7 |
| 306 DMR,NS | 40.2 | 42.1 | NA | 37.9 |
| 2930 NS/DM | 38.2 | 41.0 | NA | 33.2 |
| 7120 HO/DM | 37.9 | 42.0 | NA | 34.7 |
| 8N270 CLDM | 40.9 | 40.5 | NA | 35.8 |
| Defender plus | 35.0 | 37.1 | NA | |
| 63A21 (6 plants m ⁻²) | 41.2 | 39.0 | NA | 33.0 |
| lsd0.05 | 1.1 | 1.3 | NA | NS |

* NA – not available

Table 1: Lodging of hybrids and cultivars at 4 locations in Saskatchewan in 2011

| | Indian Head | Melfort | Saskatoon | Swift Current |
|--|------------------------|----------------|------------------|--------------------------|
| (0-10) | | | | |
| 63A2 (11.1 plants m ⁻²) | 3.3 | 1 | 0 | 2 |
| AC Sierra | 3 | 1 | 0 | 2 |
| 803 DMR NS | 2.3 | 1 | 0 | 2 |
| 306 DMR,NS | 2 | 1 | 0 | 2 |
| 2930 NS/DM | 2.3 | 1 | 0 | 2 |
| 7120 HO/DM | 2.3 | 1 | 0 | 2 |
| 8N270 CLDM | 2.8 | 1 | 0 | 2 |
| Defender plus | 2.8 | 1 | 0 | 2 |
| 63A21 (6 plants m ⁻²) | 3.5 | 1 | 0 | 2 |
| lsd0.05 | 0.7 | NS | NS | NS |

Table 15: Performance of hybrids and cultivars averaged across 5 locations in Saskatchewan in 2010

| | Grain Yield | Days to First Bloom | Maturity | Kernel moisture at Harvest | Kernel weight (g/ 1000 kernels) | Height | Lodge | Plant density | | Test weight | | Oil |
|---|--------------------|----------------------------|-----------------|-----------------------------------|--|---------------|---------------|--------------------------------|-----------------------------|--------------------|-----------------------------|------------|
| | (kg/ha) | (days) | (days) | (%) | | (cm) | (0-10) | Plant acre⁻¹ | plant m⁻² | (g/0.5L) | (kg hl⁻¹) | (%) |
| 63A21 (11.1 plants m ⁻²) | 3032 | 73.0 | 117.1 | 18.8 | 52.3 | 161.7 | 0.7 | 46907 | 11.6 | 179.9 | 36.0 | 38.6 |
| AC Sierra | NA | 70.6 | 111.6 | 21.7 | 72.4 | 116.9 | 0.9 | 15237 | 3.8 | 188.4 | 37.7 | 40.9 |
| 803 DMR NS | 2395 | 79.6 | 119.9 | 19.7 | 49.1 | 159.0 | 1.5 | 26081 | 6.4 | 178.9 | 35.8 | 40.8 |
| 306 DMR,NS | 2766 | 83.6 | 125.4 | 26.9 | 54.6 | 167.2 | 1.3 | 25690 | 6.3 | 174.8 | 35.0 | 40.2 |
| 3080 DMR,NS | 2487 | 86.4 | 127.2 | 33.7 | 41.1 | 171.2 | 0.7 | 29387 | 7.3 | 166.0 | 33.2 | 40.0 |
| 2930 NS/DM | 2689 | 82.1 | 120.7 | 22.7 | 50.0 | 166.2 | 1.2 | 25962 | 6.4 | 175.7 | 35.1 | 39.5 |
| 3433 NS/DM | 2206 | 88.2 | 126.5 | 30.0 | 51.4 | 161.4 | 1.5 | 21680 | 5.4 | 182.8 | 36.6 | 39.5 |
| 3480 NS/C1/DM | 2516 | 87.3 | 127.1 | 30.3 | 48.1 | 172.7 | 0.7 | 26973 | 6.7 | 165.1 | 33.0 | 38.0 |
| 7120 HO/DM | 2384 | 83.6 | 127.4 | 25.5 | 53.1 | 161.3 | 1.3 | 26846 | 6.6 | 173.2 | 34.6 | 39.7 |
| 8N270 CLDM | 2851 | 80.8 | 121.8 | 28.7 | 53.7 | 169.3 | 0.7 | 26506 | 6.5 | 189.5 | 37.9 | 41.3 |
| Defender plus | 2754 | 82.9 | 120.2 | 26.0 | 57.3 | 166.2 | 0.9 | 24899 | 6.2 | 177.4 | 35.5 | 37.3 |
| 63A21* (6 plants m ⁻²) | 2709 | 73.3 | 117.9 | 23.2 | 58.1 | 150.2 | 0.8 | 30599 | 7.6 | 175.4 | 35.1 | 38.0 |
| Isd 0.05 | 676 | 2.5 | 2.2 | 7.5 | 5.5 | 10.1 | | 6416 | 1.6 | 7.1 | | 0.8 |

*NA – not available

Table 16: Seed Yield of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook** | Swift Current | Tribune |
|--------------------------------------|------------------------|----------------|------------------|--------------------------|----------------|
| | | | (kg/ha) | | |
| 63A21 (11.1 plants m ⁻²) | 2049.0 | 3922.8 | 4840.6 | 2093.1 | NA |
| AC Sierra | NA | NA | NA | NA | NA |
| 803 DMR NS | 1044.9 | 3211.3 | 4430.4 | 1716.2 | 1572.1 |
| 306 DMR,NS | 1481.6 | 3795.6 | 5052.2 | 1726.1 | 1775.3 |
| 3080 DMR,NS | 1380.6 | 3138.4 | 4421.1 | 1563.7 | 1929.3 |
| 2930 NS/DM | 1170.1 | 3811.6 | 4764.7 | 2034.4 | 1663.8 |
| 3433 NS/DM | 1464.2 | 2031.0 | 4365.8 | 1269.7 | 1899.4 |
| 3480 NS/CI/DM | 1496.4 | 3672.7 | 4507.2 | 1003.1 | 1900.8 |
| 7120 HO/DM | 1282.4 | 3170.3 | 4196.9 | 1393.9 | 1874.8 |
| 8N270 CLDM | 1722.1 | 3712.0 | 5037.1 | 2079.4 | 1706.9 |
| Defender plus | 1595.2 | 3448.7 | 5343.5 | 1737.6 | 1643.9 |
| 63A21 (6 plants m ⁻²) | 1840.4 | 3315.4 | 4486.2 | 1971.7 | NA |
| lsd 0.05 | 633.2 | 633.2 | 633.2 | 633.2 | 633.2 |

* NA – not available

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Table 17: Oil (%) content of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook** | Swift Current | Tribune |
|--------------------------------------|------------------------|----------------|------------------|--------------------------|----------------|
| | | | (%) | | |
| 63A21 (11.1 plants m ⁻²) | 40.0 | 42.3 | 41.5 | 35.4 | 38.2 |
| AC Sierra | 39.4 | 44.0 | 39.5 | 45.7 | NA |
| 803 DMR NS | 39.9 | 43.4 | 44.1 | 39.5 | 40.4 |
| 306 DMR,NS | 40.0 | 42.4 | 42.2 | 39.1 | 40.2 |
| 3080 DMR,NS | 39.8 | 42.2 | 40.9 | 38.4 | 41.8 |
| 2930 NS/DM | 38.0 | 42.4 | 41.6 | 39.1 | 39.8 |
| 3433 NS/DM | 38.0 | 40.6 | 40.2 | 39.2 | 42.8 |
| 3480 NS/CI/DM | 38.5 | 40.7 | 38.2 | 34.7 | 41.1 |
| 7120 HO/DM | 38.9 | 41.5 | 42.0 | 38.0 | 40.5 |
| 8N270 CLDM | 41.4 | 43.2 | 41.2 | 42.9 | 41.7 |
| Defender plus | 37.5 | 39.5 | 39.4 | 35.4 | 38.6 |
| 63A21 (6 plants m ⁻²) | 37.5 | 40.9 | 41.3 | 37.6 | 35.9 |
| lsd0.05 | 1.8 | 1.4 | 1.7 | 2.3 | 2.0 |

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Table 18: Test Weight of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook** | Swift Current | Tribune |
|--------------------------------------|------------------------|----------------|------------------|--------------------------|----------------|
| | (g/0.5L) | | | | |
| 63A21 (11.1 plants m ⁻²) | 163.1 | 197.4 | 196.0 | 155.4 | 187.5 |
| AC Sierra | 171.9 | 205.8 | 196.8 | 174.2 | NA |
| 803 DMR NS | 160.3 | 191.5 | 201.7 | 156.7 | 184.1 |
| 306 DMR,NS | 155.6 | 191.9 | 196.4 | 152.3 | 177.9 |
| 3080 DMR,NS | 147.7 | 182.3 | 180.9 | 148.2 | 170.8 |
| 2930 NS/DM | 156.2 | 192.5 | 196.0 | 154.2 | 179.4 |
| 3433 NS/DM | 163.8 | 192.8 | 203.3 | 171.1 | 182.7 |
| 3480 NS/C1/DM | 145.8 | 183.2 | 182.9 | 144.3 | 169.5 |
| 7120 HO/DM | 152.1 | 188.9 | 194.3 | 151.2 | 179.6 |
| 8N270 CLDM | 168.3 | 204.0 | 203.8 | 174.6 | 197.0 |
| Defender plus | 157.8 | 196.0 | 196.2 | 155.2 | 182.0 |
| 63A21 (6 plants m ⁻²) | 156.0 | 192.8 | 192.2 | 155.9 | 180.2 |
| lsd 0.05 | 8.1 | 8.1 | 8.1 | 8.1 | 8.1 |
| | (lb/bu) | | | | |
| 63A21 (11.1 plants m ⁻²) | 26.1 | 31.6 | 31.4 | 24.9 | 30.0 |
| AC Sierra | 27.5 | 32.9 | 31.5 | 27.9 | NA |
| 803 DMR NS | 25.6 | 30.6 | 32.3 | 25.1 | 29.5 |
| 306 DMR,NS | 24.9 | 30.7 | 31.4 | 24.4 | 28.5 |
| 3080 DMR,NS | 23.6 | 29.2 | 29.0 | 23.7 | 27.3 |
| 2930 NS/DM | 25.0 | 30.8 | 31.4 | 24.7 | 28.7 |
| 3433 NS/DM | 26.2 | 30.9 | 32.5 | 27.4 | 29.2 |
| 3480 NS/C1/DM | 23.3 | 29.3 | 29.3 | 23.1 | 27.1 |
| 7120 HO/DM | 24.3 | 30.2 | 31.1 | 24.2 | 28.7 |
| 8N270 CLDM | 26.9 | 32.6 | 32.6 | 27.9 | 31.5 |
| Defender plus | 25.3 | 31.4 | 31.4 | 24.8 | 29.1 |
| 63A21 (6 plants m ⁻²) | 25.0 | 30.8 | 30.8 | 24.9 | 28.8 |

* NA – not available

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Table 19: Kernel weight of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook* | Swift Current | Tribune |
|--------------------------------------|-------------------|---------|----------|------------------|---------|
| | (g/ 1000 kernels) | | | | |
| 63A21 (11.1 plants m ⁻²) | 82.6 | 45.0 | 49.0 | 27.9 | 57.2 |
| AC Sierra | 108.8 | 63.2 | 67.6 | 44.2 | 77.9 |
| 803 DMR NS | 70.4 | 40.8 | 48.9 | 26.1 | 59.2 |
| 306 DMR,NS | 81.3 | 44.4 | 53.4 | 31.5 | 62.3 |
| 3080 DMR,NS | 65.1 | 33.9 | 39.9 | 24.1 | 42.6 |
| 2930 NS/DM | 76.2 | 40.7 | 49.3 | 27.5 | 56.3 |
| 3433 NS/DM | 77.5 | 43.8 | 46.2 | 30.6 | 58.8 |
| 3480 NS/CI/DM | 74.1 | 44.0 | 46.4 | 25.6 | 50.2 |
| 7120 HO/DM | 80.5 | 44.9 | 49.4 | 30.8 | 60.1 |
| 8N270 CLDM | 76.3 | 45.5 | 53.9 | 35.0 | 57.8 |
| Defender plus | 81.6 | 51.1 | 55.5 | 34.5 | 63.9 |
| 63A21 (6 plants m ⁻²) | 95.3 | 48.7 | 51.8 | 33.4 | 61.5 |
| lsd 0.05 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 |

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Table 20: Maturity of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook** | Swift Current | Tribune |
|--------------------------------------|----------------|---------|-----------|------------------|---------|
| | (Days) | | | | |
| 63A21 (11.1 plants m ⁻²) | 117.6 | 124.7 | 117.0 | 108.8 | 117.2 |
| AC Sierra | 113.1 | 119.6 | 111.0 | 102.5 | NA |
| 803 DMR NS | 122.4 | 126.0 | 119.1 | 113.5 | 118.5 |
| 306 DMR,NS | 129.0 | 130.0 | 122.9 | 118.1 | 127.0 |
| 3080 DMR,NS | 131.0 | 133.0 | 125.3 | 118.6 | 128.1 |
| 2930 NS/DM | 121.7 | 126.1 | 121.1 | 113.2 | 121.2 |
| 3433 NS/DM | 128.5 | 130.4 | 127.7 | 117.2 | 128.6 |
| 3480 NS/CI/DM | 129.0 | 133.8 | 127.8 | 118.2 | 126.4 |
| 7120 HO/DM | 129.1 | 131.3 | 127.9 | 117.8 | 130.7 |
| 8N270 CLDM | 125.1 | 127.7 | 122.6 | 114.0 | 119.7 |
| Defender plus | 123.3 | 126.4 | 119.6 | 114.2 | 117.5 |
| 63A21 (6 plants m ⁻²) | 120.0 | 124.8 | 117.1 | 110.0 | 117.4 |
| lsd 0.05 | 1.8 | 1.8 | 1.8 | 1.8 | 1.8 |

* NA – not available

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Table 2: Days to First Bloom of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook** | Swift Current | Tribune |
|--------------------------------------|--------------------|----------------|------------------|----------------------|----------------|
| | | | (Days) | | |
| 63A21 (11.1 plants m ⁻²) | 79.7 | 68.8 | 69.0 | NA* | 74.5 |
| AC Sierra | 75.5 | 67.5 | 66.9 | NA | 72.6 |
| 803 DMR NS | 86.8 | 75.8 | 75.5 | NA | 80.4 |
| 306 DMR,NS | 89.2 | 79.8 | 78.8 | NA | 86.4 |
| 3080 DMR,NS | 95.5 | 81.7 | 82.1 | NA | 86.2 |
| 2930 NS/DM | 89.5 | 77.8 | 77.8 | NA | 83.4 |
| 3433 NS/DM | 96.4 | 83.0 | 83.9 | NA | 89.6 |
| 3480 NS/CI/DM | 95.4 | 81.3 | 83.9 | NA | 88.6 |
| 7120 HO/DM | 89.7 | 79.8 | 79.1 | NA | 85.6 |
| 8N270 CLDM | 90.5 | 75.7 | 76.9 | NA | 80.2 |
| Defender plus | 90.9 | 80.3 | 78.2 | NA | 82.0 |
| 63A21 (6 plants m ⁻²) | 81.7 | 68.5 | 68.9 | NA | 73.9 |
| lsd 0.05 | 2.4 | 2.4 | 2.4 | NA | 2.4 |

* NA – not available

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Table 22: Plant Height of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook** | Swift Current | Tribune |
|--------------------------------------|--------------------|----------------|------------------|----------------------|----------------|
| | | | (cm) | | |
| 63A21 (11.1 plants m ⁻²) | 150.5 | 163.5 | 171.2 | NA | NA |
| AC Sierra | 105.9 | 118.9 | 126.0 | NA | NA |
| 803 DMR NS | 144.8 | 162.3 | 169.9 | NA | NA |
| 306 DMR,NS | 158.3 | 167.6 | 175.9 | NA | NA |
| 3080 DMR,NS | 158.9 | 170.2 | 184.4 | NA | NA |
| 2930 NS/DM | 155.8 | 166.7 | 176.2 | NA | NA |
| 3433 NS/DM | 149.2 | 161.3 | 173.8 | NA | NA |
| 3480 NS/CI/DM | 162.9 | 170.0 | 185.1 | NA | NA |
| 7120 HO/DM | 150.0 | 159.6 | 174.4 | NA | NA |
| 8N270 CLDM | 161.1 | 167.3 | 179.6 | NA | NA |
| Defender plus | 156.3 | 167.3 | 175.2 | NA | NA |
| 63A21 (6 plants m ⁻²) | 141.2 | 148.4 | 160.9 | NA | NA |
| lsd 0.05 | 11.1 | 11.1 | 11.1 | NA | NA |

* NA – not available

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Table 23: Plant density of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook | Swift Current | Tribune |
|--------------------------------------|--------------------|----------------|------------------------------|----------------------|----------------|
| | | | (plants acre ⁻¹) | | |
| 63A21 (11.1 plants m ⁻²) | 49844 | 36713 | 65615 | 61562 | 20800 |
| AC Sierra | 16994 | 12901 | 18443 | 24186 | 3661 |
| 803 DMR NS | 27130 | 20465 | 34976 | 38486 | 9348 |
| 306 DMR,NS | 27981 | 22428 | 30960 | 36953 | 10130 |
| 3080 DMR,NS | 29624 | 22194 | 35106 | 46918 | 13094 |
| 2930 NS/DM | 27510 | 23208 | 30419 | 38803 | 9867 |
| 3433 NS/DM | 21721 | 14916 | 29775 | 34641 | 7345 |
| 3480 NS/CI/DM | 26575 | 21439 | 34629 | 38772 | 13451 |
| 7120 HO/DM | 27022 | 22790 | 33616 | 37669 | 13133 |
| 8N270 CLDM | 28584 | 20598 | 37959 | 32293 | 13096 |
| Defender plus | 24327 | 22181 | 31895 | 36003 | 10091 |
| 63A21 (6 plants m ⁻²) | 32784 | 23964 | 43898 | 40964 | 11387 |
| lsd 0.05 | 6930 | 6930 | 6930 | 6930 | 6930 |

Table 24: Kernel moisture at harvest of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook** | Swift Current | Tribune |
|--------------------------------------|--------------------|----------------|------------------|----------------------|----------------|
| | | | (%) | | |
| 63A21 (11.1 plants m ⁻²) | 11.4 | 36.5 | 8.5 | NA | NA |
| AC Sierra | 12.0 | 37.4 | 15.8 | NA | NA |
| 803 DMR NS | 10.7 | 39.3 | 9.1 | NA | NA |
| 306 DMR,NS | 16.6 | 50.1 | 14.1 | NA | NA |
| 3080 DMR,NS | 27.5 | 57.6 | 15.9 | NA | NA |
| 2930 NS/DM | 14.1 | 44.2 | 9.8 | NA | NA |
| 3433 NS/DM | 23.7 | 53.5 | 12.7 | NA | NA |
| 3480 NS/CI/DM | 21.3 | 54.8 | 14.8 | NA | NA |
| 7120 HO/DM | 17.6 | 45.8 | 13.1 | NA | NA |
| 8N270 CLDM | 18.2 | 50.4 | 17.6 | NA | NA |
| Defender plus | 15.4 | 49.4 | 13.2 | NA | NA |
| 63A21 (6 plants m ⁻²) | 13.9 | 44.0 | 11.8 | NA | NA |
| lsd 0.05 | 6.1 | 6.1 | 6.1 | NA | NA |

* NA – not available due to the harvest occurring well after the plants had matured and precipitation had rewetted the heads several times before harvest

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Table 3: Lodging of hybrids and cultivars at 5 locations in Saskatchewan in 2010

| | Indian Head | Melfort | Outlook (0-10) | Swift Current | Tribune |
|--------------------------------------|------------------------|----------------|---------------------------|--------------------------|----------------|
| 63A21 (11.1 plants m ⁻²) | 1.5 | 1.0 | 1.0 | 0.0 | 0.0 |
| AC Sierra | 2.4 | 1.0 | 1.0 | 0.3 | 0.0 |
| 803 DMR NS | 4.8 | 1.1 | 1.3 | 0.2 | 0.1 |
| 306 DMR,NS | 4.0 | 1.0 | 1.3 | 0.1 | 0.1 |
| 3080 DMR,NS | 1.3 | 1.0 | 1.4 | 0.1 | 0.0 |
| 2930 | 3.9 | 1.0 | 1.1 | 0.1 | 0.1 |
| 3433 | 1.6 | 1.1 | 1.5 | 3.4 | 0.1 |
| 3480CI | 1.1 | 1.0 | 1.0 | 0.7 | 0.0 |
| 7120 HO/DM | 4.2 | 1.0 | 1.3 | 0.1 | 0.1 |
| 8N270 CLDM | 1.3 | 1.0 | 1.2 | 0.0 | 0.0 |
| Defender plus | 2.2 | 1.0 | 1.0 | 0.3 | 0.0 |
| 63A21 (6 plants m ⁻²) | 1.3 | 1.0 | 1.6 | 0.3 | 0.0 |
| lsd 0.05 | 0.9 | 0.9 | 0.9 | 0.9 | 0.9 |