



Report No. 27

***MANITOBA
REGIONAL
SUNFLOWER
PERFORMANCE TEST - 2006***

***A report on tests of Commercial Hybrids
Sponsored by the Manitoba Sunflower Committee***

Note: Not for publication. Data cannot be used in whole or in part without the permission of The Manitoba Sunflower Committee.



Manitoba

Building for the Future

**MANITOBA REGIONAL
SUNFLOWER PERFORMANCE TESTS
2006
SPONSORED BY THE
MANITOBA SUNFLOWER COMMITTEE**

Committee Members:

| | | |
|---------------------|---|-------------------------|
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| Mike Durand | Processor, West-Can Agra Inc. | <i>Secretary</i> |
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|-----------------------|--|
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| <i>MacGregor Site</i> | Brent Wright / Kathleen Meagher (ICMS) |
| <i>Elgin Site</i> | David Rourke / Kevin Martens / Ashley Robertson (Ag-Quest) |
| <i>Altona Site</i> | Khalid Rashid (AAFC) / John Kehler |

INTRODUCTION

The Manitoba Sunflower Committee (MSC) was organized under the authority of the Minister of Agriculture for Manitoba to provide a vehicle for testing sunflower hybrids in Manitoba. The Committee has conducted performance cooperative trials since 1979. The data generated through these trials is used to support registration of sunflower hybrids in Canada. A minimum of two years performance data is required in order to determine the acceptability of hybrids for registration. However, hybrids can be recommended for registration based on one-year cooperative data supported by another year of private data. In addition, the performance data is published in Seed Manitoba, providing helpful information to sunflower growers in selecting hybrids for their farm production. The Committee conducted trials at four locations in 2006; Altona, Morden, Portage la Prairie and Minto, and results from three trials (Morden, Altona, and Minto) were used by the Committee for recommending hybrids for registration. Yields, oil contents, and quality from Morden, Altona, and Minto were average to above average in 2006. The Portage la Prairie Trial was discontinued due to seeding problems, poor stand, and severe wind breakage.

The 2006 growing season started with adequate soil moisture and normal growing conditions in May and June. The second half of the growing season was dry and warm but this did not have negative impacts on sunflower since the crop root system can access the moisture deep down in the soil. In general, disease and insect infestations were low in comparison to previous years, and excellent seed quality is expected. Total seeded sunflower acres in 2006 reported by MCIC were 150,800 acres of confections and 41,300 of oils.

The Manitoba Sunflower Committee in conjunction with the National Sunflower Association of Canada (NSAC) ran the annual field tour and the Diagnostic School on July 26, 2006. The 1-day event attracted almost 80 participants.

The Manitoba Sunflower Committee hopes that this service will continue to be useful to sunflower breeders, growers, seed companies, processors and the sunflower industry at large.

Brian Jack, Chairman
Manitoba Sunflower Committee

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TABLE 1: MANITOBA SUNFLOWER COMMITTEE - 2006 OILSEED CANDIDATE HYBRIDS.

| COMPANY | HYBRID | | TYPE | YEAR |
|-------------------|---------------|------------------|-------------|--------------|
| SEEDS2000 | DefenderPlus | (X6519) | Nus | 3 |
| SEEDS2000 | Defender HO | (X6506) | HO | 2 |
| SEEDS2000 | VIPER | (IMI) | Nus | 1 |
| SEEDS2000 | X9765 | (IMI) | HO | 1 |
| MYCOGEN | 8H288DM | | HO | 2 |
| MYCOGEN | 8H350DM | | HO | 2 |
| MYCOGEN | 8N270 | | Nus | 2 |
| MYCOGEN | 8N272 | | Nus | 2 |
| MYCOGEN | 8N453DM | | Nus | 1 |
| MYCOGEN | 8N337DM | | Nus | 1 |
| MYCOGEN | 8N386CL | (IMI) | Nus | 1 |
| PIONEER | YF3425 | (XF3425, 422700) | Nus | 2 |
| INTERSTATE | MH4436 | (Treated) | Nus | 1 |
| CROPLAN GENETICS | 305 | (Treated) | NusScl | 1 |
| CROPLAN GENETICS | 343 | (Treated) | Nus | 1 |
| INTERSTATE | 6111 | | Oil | Check |
| PIONEER | 63M52 | (XF306) | Nus | Check |

TABLE 2: MANITOBA SUNFLOWER COMMITTEE - 2006 CONFECTIONARY CANDIDATE HYBRIDS.

| COMPANY | HYBRID | | TYPE | YEAR |
|-------------------|----------------|---------------------|-------------|--------------|
| SEEDS2000 | Cougar | (X9985) | Con | 4 |
| SEEDS2000 | Panther | | Con | 1 |
| SEEDS2000 | Jaguar | (IMI) | Con | 1 |
| MYCOGEN | 8C416 | (X91416) | Con | 4 |
| MYCOGEN | 8C481 | | Con | 1 |
| MYCOGEN | 8C482 | | Con | 1 |
| CHS Sunflower | RH 112 | (04EXP02) (Treated) | Con | 2 |
| CHS Sunflower | RH 1122 | (Treated) | Con | 1 |
| CROPLAN GENETICS | 130 | (Treated) | Con | 2 |
| PIONEER | 6946 | (DE-1950) | Con | Check |
| MYCOGEN | 9338 | (X5432) | Con | Check |
| INTERSTATE | IS 8048 | | Con | Check |

**Table 3: Performance data from the Manitoba Oilseed Sunflower Co-op Trial 2006
(Altona, Morden and Minto).**

| Hybrid | Yield (kg/ha) | % Oil | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) |
|-----------------------|------------------|-------------|-------------------------|------------------------|-------------------------|--------------------------------|--------------------------|
| 6111 | 3608 | 49.0 | 67 | 113 | 166 | 479 | 54 |
| 63M52 (XF306) | 3596 | 51.9 | 72 | 116 | 170 | 449 | 62 |
| Defender Plus (X6519) | 3234 | 46.9 | 71 | 113 | 170 | 447 | 54 |
| Defender HO (X6506) | 3223 | 45.3 | 71 | 114 | 176 | 438 | 53 |
| 8H288DM | 3224 | 53.5 | 71 | 116 | 164 | 449 | 43 |
| 8H350DM | 3257 | 52.8 | 73 | 120 | 183 | 440 | 43 |
| 8N270 | 2738 | 49.1 | 70 | 111 | 163 | 443 | 46 |
| 8N272 | 2664 | 49.2 | 69 | 111 | 161 | 436 | 49 |
| YF3425 (XF3425) | 3561 | 47.9 | 73 | 115 | 168 | 450 | 58 |
| VIPER (IMI) | 2812 | 47.6 | 75 | 116 | 172 | 438 | 38 |
| X9765 (IMI) | 2540 | 47.8 | 76 | 120 | 182 | 467 | 49 |
| 8N453DM | 3584 | 53.6 | 74 | 121 | 179 | 468 | 47 |
| 8N337DM | 3201 | 54.8 | 71 | 117 | 177 | 450 | 49 |
| 8N386CL (IMI) | 2716 | 48.4 | 75 | 123 | 182 | 420 | 48 |
| MH4436★ | 3399 | 50.8 | 72 | 116 | 173 | 441 | 54 |
| 305★ | 3520 | 47.2 | 71 | 114 | 174 | 471 | 52 |
| 343★ | 3546 | 46.5 | 74 | 119 | 181 | 463 | 58 |
| Mean (All) | 3201 | 49.5 | 72 | 116 | 173 | 450 | 50 |
| Mean (Checks) | 3602 | 50.5 | 69 | 114 | 168 | 464 | 58 |
| C.V. | 11 | 2.3 | 2 | 3 | 6 | 3 | 9 |
| LSD 5% | 304 | 0.9 | 1 | 3 | 8 | 12 | 4 |

★ - These hybrids had treated seed.

Table 4: Performance data from the Manitoba Oilseed Sunflower Co-op Trial 2006 (Altona).

| Hybrid | Yield (kg/ha) | % Oil | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) |
|-----------------------|------------------|-------------|-------------------------|------------------------|-------------------------|--------------------------------|--------------------------|
| 6111 | 3784 | 50.0 | 70 | 113 | 194 | 461 | 57 |
| 63M52 (XF306) | 3725 | 53.5 | 75 | 118 | 202 | 441 | 61 |
| Defender Plus (X6519) | 3330 | 49.2 | 73 | 115 | 197 | 434 | 51 |
| Defender HO (X6506) | 3073 | 46.3 | 73 | 115 | 206 | 420 | 52 |
| 8H288DM | 3426 | 54.4 | 75 | 118 | 199 | 432 | 42 |
| 8H350DM | 3454 | 54.3 | 77 | 119 | 213 | 426 | 43 |
| 8N270 | 2763 | 50.1 | 72 | 113 | 195 | 424 | 43 |
| 8N272 | 2688 | 50.2 | 72 | 114 | 193 | 417 | 50 |
| YF3425 (XF3425) | 3687 | 49.0 | 76 | 118 | 191 | 436 | 61 |
| VIPER (IMI) | 3122 | 50.3 | 75 | 117 | 210 | 446 | 38 |
| X9765 (IMI) | 2970 | 50.3 | 76 | 120 | 208 | 469 | 52 |
| 8N453DM | 3715 | 55.4 | 76 | 120 | 210 | 456 | 45 |
| 8N337DM | 3078 | 56.3 | 73 | 117 | 205 | 429 | 47 |
| 8N386CL (IMI) | 3004 | 50.9 | 76 | 118 | 205 | 419 | 46 |
| MH4436★ | 3434 | 51.1 | 75 | 117 | 203 | 420 | 54 |
| 305★ | 3622 | 48.4 | 75 | 116 | 197 | 457 | 55 |
| 343★ | 3207 | 47.1 | 76 | 118 | 206 | 441 | 59 |
| Mean (All) | 3299 | 51.0 | 74 | 117 | 202 | 437 | 50 |
| Mean (Checks) | 3754 | 51.8 | 72 | 116 | 198 | 451 | 59 |
| C.V. | 9 | 1.5 | 2 | 1 | 4 | 3 | 8 |
| LSD 5% | 399 | 1.1 | 3 | 2 | 11 | 16 | 6 |

★ - These hybrids had treated seed.

Seeded: May 12th, 2006Harvested: October 28th, 2006

Table 5: Performance data from the Manitoba Oilseed Sunflower Co-op Trial 2006 (Morden).

| Hybrid | Yield (kg/ha) | % Oil | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) | Meal Protein (%) | Fatty Acids | | | |
|-----------------------|------------------|-------------|-------------------------|------------------------|-------------------------|--------------------------------|--------------------------|------------------------|-------------------|------------------|----------------|-------------------|
| | | | | | | | | | Palmitate 16:0 | Stearate 18:0 | Oleate 18:1 | Linoleate 18:2 |
| 6111 | 4213 | 50.3 | 65 | 113 | 167 | 478 | 58 | 55 | 5.9 | 4.0 | 31.1 | 59.0 |
| 63M52 (XF306) | 4280 | 54.3 | 70 | 115 | 172 | 459 | 69 | 53 | 4.0 | 5.5 | 61.6 | 28.9 |
| Defender Plus (X6519) | 4103 | 48.9 | 69 | 114 | 171 | 451 | 59 | 57 | 4.5 | 4.7 | 61.8 | 29.0 |
| Defender HO (X6506) | 3937 | 47.0 | 69 | 116 | 170 | 449 | 57 | 56 | 3.5 | 4.4 | 86.1 | 6.0 |
| 8H288DM | 3733 | 55.7 | 68 | 119 | 155 | 460 | 45 | 53 | 2.9 | 3.4 | 89.0 | 4.6 |
| 8H350DM | 3915 | 54.7 | 70 | 124 | 180 | 452 | 43 | 55 | 2.9 | 3.2 | 90.1 | 3.8 |
| 8N270 | 3369 | 51.5 | 70 | 113 | 164 | 453 | 47 | 56 | 4.0 | 4.2 | 69.3 | 22.5 |
| 8N272 | 3646 | 51.6 | 68 | 114 | 158 | 447 | 50 | 56 | 3.8 | 3.7 | 78.1 | 14.4 |
| YF3425 (XF3425) | 3945 | 48.9 | 72 | 114 | 169 | 453 | 61 | 55 | 3.8 | 3.7 | 67.1 | 25.4 |
| VIPER (IMI) | 3462 | 49.4 | 73 | 118 | 165 | 458 | 39 | 58 | 4.2 | 4.5 | 57.4 | 33.9 |
| X9765 (IMI) | 3235 | 49.6 | 73 | 128 | 185 | 492 | 50 | 58 | 3.5 | 4.0 | 74.9 | 17.6 |
| 8N453DM | 4261 | 55.4 | 71 | 128 | 176 | 475 | 49 | 56 | 3.9 | 4.6 | 69.9 | 21.6 |
| 8N337DM | 3863 | 57.0 | 69 | 122 | 177 | 466 | 54 | 54 | 4.0 | 3.8 | 68.1 | 24.0 |
| 8N386CL (IMI) | 3290 | 50.6 | 73 | 135 | 188 | 435 | 52 | 59 | 4.8 | 3.9 | 54.1 | 37.2 |
| MH4436★ | 4123 | 53.5 | 70 | 122 | 173 | 455 | 57 | 53 | 3.2 | 4.2 | 85.8 | 6.9 |
| 305★ | 4142 | 49.0 | 70 | 114 | 184 | 467 | 57 | 54 | 3.2 | 5.0 | 85.3 | 6.5 |
| 343★ | 4283 | 48.7 | 71 | 127 | 184 | 468 | 61 | 55 | 3.1 | 4.5 | 86.1 | 6.3 |
| Mean (All) | 3870 | 51.5 | 70 | 120 | 173 | 460 | 53 | 55 | 3.8 | 4.2 | 71.5 | 20.4 |
| Mean (Checks) | 4247 | 52.3 | 67 | 114 | 170 | 469 | 63 | 54 | 5.0 | 4.8 | 46.4 | 44.0 |
| C.V. | 10 | 1.5 | 2 | 3 | 6 | 2 | 9 | 3 | 4.2 | 12.5 | 4.9 | 16.4 |
| LSD 5% | 538 | 1.1 | 2 | 5 | 14 | 12 | 7 | 3 | 0.2 | 0.7 | 4.9 | 4.8 |

★ - These hybrids had treated seed.

Seeded: May 15th, 2006Harvested: October 13th, 2006

Table 6: Performance data from the Manitoba Oilseed Sunflower Co-op Trial 2006 (Minto).

| Hybrid | Yield (kg/ha)* | % Oil | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) | % Bird Damage | % Disease [■] | % Lodged Plants |
|-----------------------|-------------------|-------------|-------------------------|------------------------|-------------------------|--------------------------------|--------------------------|---------------------|---------------------------|-----------------------|
| 6111 | 2568 | 46.8 | 66 | 113 | 135 | 497 | 47 | 3 | 10 | 16 |
| 63M52 (XF306) | 2510 | 48.1 | 71 | 114 | 138 | 445 | 56 | 3 | 15 | 1 |
| Defender Plus (X6519) | 1945 | 42.4 | 70 | 109 | 143 | 456 | 52 | 4 | 24 | 1 |
| Defender HO (X6506) | 2470 | 42.5 | 70 | 110 | 152 | 446 | 51 | 0 | 18 | 0 |
| 8H288DM | 2275 | 50.4 | 70 | 110 | 138 | 456 | 43 | 3 | 22 | 4 |
| 8H350DM | 2336 | 49.4 | 71 | 117 | 156 | 444 | 44 | 3 | 17 | 2 |
| 8N270 | 1864 | 45.7 | 68 | 106 | 130 | 451 | 48 | 1 | 29 | 1 |
| 8N272 | 1324 | 45.8 | 68 | 107 | 134 | 444 | 49 | 8 | 35 | 7 |
| YF3425 (XF3425) | 2883 | 45.9 | 73 | 113 | 144 | 460 | 52 | 0 | 9 | 2 |
| VIPER (IMI) | 1534 | 43.0 | 75 | 114 | 142 | 410 | 35 | 6 | 43 | 1 |
| X9765 (IMI) | 1042 | 43.6 | 78 | 112 | 154 | 440 | 46 | 1 | 39 | 2 |
| 8N453DM | 2505 | 49.9 | 75 | 115 | 151 | 472 | 46 | 0 | 8 | 5 |
| 8N337DM | 2482 | 51.1 | 72 | 114 | 148 | 455 | 46 | 1 | 12 | 2 |
| 8N386CL (IMI) | 1566 | 43.8 | 77 | 117 | 153 | 407 | 45 | 5 | 38 | 4 |
| MH4436★ | 2385 | 47.8 | 72 | 109 | 144 | 448 | 51 | 1 | 22 | 1 |
| 305★ | 2557 | 44.3 | 70 | 111 | 141 | 489 | 43 | 0 | 2 | 5 |
| 343★ | 3016 | 43.8 | 74 | 113 | 152 | 481 | 55 | 0 | 5 | 3 |
| Mean (All) | 2192 | 46.1 | 72 | 112 | 144 | 453 | 48 | 2 | 21 | 3 |
| Mean (Checks) | 2539 | 47.5 | 68 | 113 | 137 | 471 | 51 | 3 | 12 | 8 |
| C.V. | 14 | 2.6 | 1 | 1 | 6 | 3 | 8 | 138 | 56 | 134 |
| LSD 5% | 509 | 1.7 | 1 | 1 | 12 | 22 | 5 | 4 | 16 | 6 |

★ - These hybrids had treated seed.

❖ - Yield was adjusted for bird damage.

■ - Percent disease is based on natural infection.

Seeded: May 25th, 2006Harvested: October 18th, 2006

Table 7: Performance data from the Manitoba Oilseed Sunflower Co-op Trials, candidate and check hybrids, 2005 and 2006 combined.

| Hybrid | Year • | Yield (kg/ha) | % Oil | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) |
|-----------------------|-------------------------------|---------------|-------------|-------------------|------------------|-------------------|--------------------------|--------------------|
| Defender Plus (X6519) | 2005 (3) | 4325 | 46.6 | 77 | 116 | 175 | 432 | 62 |
| | 2006 (3) | 3234 | 46.9 | 71 | 113 | 170 | 447 | 54 |
| | Mean | 3780 | 46.8 | 74 | 114 | 173 | 440 | 58 |
| Defender HO (X6506) | 2005 (3) | 4194 | 44.5 | 77 | 118 | 179 | 430 | 54 |
| | 2006 (3) | 3223 | 45.3 | 71 | 114 | 176 | 438 | 53 |
| | Mean | 3709 | 44.9 | 74 | 116 | 178 | 434 | 54 |
| 8H288DM | 2005 (3) | 3654 | 52.0 | 78 | 120 | 169 | 420 | 50 |
| | 2006 (3) | 3224 | 53.5 | 71 | 116 | 164 | 449 | 43 |
| | Mean | 3439 | 52.8 | 75 | 118 | 167 | 435 | 47 |
| 8H350DM | 2005 (3) | 3967 | 50.5 | 79 | 121 | 182 | 420 | 48 |
| | 2006 (3) | 3257 | 52.8 | 73 | 120 | 183 | 440 | 43 |
| | Mean | 3612 | 51.7 | 76 | 121 | 183 | 430 | 46 |
| 8N270 | 2005 (3) | 3843 | 46.3 | 74 | 116 | 149 | 412 | 66 |
| | 2006 (3) | 2738 | 49.1 | 70 | 111 | 163 | 443 | 46 |
| | Mean | 3291 | 47.7 | 72 | 114 | 156 | 428 | 56 |
| 8N272 | 2005 (3) | 3520 | 45.5 | 76 | 118 | 147 | 416 | 67 |
| | 2006 (3) | 2664 | 49.2 | 69 | 111 | 161 | 436 | 49 |
| | Mean | 3092 | 47.4 | 73 | 115 | 154 | 426 | 58 |
| YF3425 (XF3425) | 2004 (4) | 1902 | 40.2 | 85 | 130 | 149 | 339 | 50 |
| | 2006 (3) | 3561 | 47.9 | 73 | 115 | 168 | 450 | 58 |
| | Mean | 2732 | 44.1 | 79 | 123 | 159 | 395 | 54 |
| Oil Check (6111) | 2004 (4) | 1499 | 41.9 | 79 | 122 | 143 | 363 | 53 |
| | 2005 (3) | 3979 | 47.9 | 72 | 114 | 157 | 445 | 60 |
| | 2006 (3) | 3608 | 49.0 | 67 | 113 | 166 | 479 | 54 |
| | Mean (2005 & 2006) | 3794 | 48.5 | 70 | 114 | 162 | 462 | 57 |
| | Mean (2004 & 2006) | 2554 | 45.5 | 73 | 118 | 155 | 421 | 54 |
| Nusun Check (63M52) | 2004 (4) | 1197 | 42.1 | 83 | 123 | 150 | 335 | 55 |
| | 2005 (3) | 3904 | 50.2 | 79 | 119 | 164 | 427 | 77 |
| | 2006 (3) | 3596 | 51.9 | 72 | 116 | 170 | 449 | 62 |
| | Mean (2005 & 2006) | 3750 | 51.1 | 76 | 118 | 167 | 438 | 70 |
| | Mean (2004 & 2006) | 2397 | 47.0 | 78 | 120 | 160 | 392 | 59 |

• - Value between parentheses is the number of trials tested per year.

**Table 8: Performance data from the Manitoba Confectionary Sunflower Co-op Trial 2006
(Altona, Morden and Minto).**

| Hybrid | Yield (kg/ha) | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) | % Nut- meat | Seed Size % Over Screen | | | |
|----------------------------------|------------------|-------------------------|------------------------|-------------------------|--------------------------------|--------------------------|-------------------|-------------------------|-----------|-----------|-----------|
| | | | | | | | | >20 | 18-20 | 16-18 | |
| 6946 | (DE-1950) | 3315 | 71 | 113 | 174 | 360 | 112 | 62 | 37 | 36 | 20 |
| 9338 | (X5432) | 3009 | 72 | 118 | 189 | 355 | 123 | 54 | 47 | 25 | 16 |
| IS 8048 | | 2904 | 71 | 116 | 188 | 373 | 126 | 52 | 46 | 28 | 14 |
| Cougar | (X9985) | 3006 | 70 | 114 | 175 | 340 | 122 | 58 | 65 | 15 | 7 |
| 8C416 | (X91416) | 2750 | 72 | 120 | 196 | 333 | 117 | 50 | 53 | 22 | 14 |
| RH 112★ | (04EXP02) | 3372 | 72 | 114 | 194 | 323 | 145 | 49 | 80 | 7 | 3 |
| 130★ | | 2701 | 72 | 113 | 185 | 333 | 107 | 53 | 52 | 13 | 13 |
| Panther | | 2699 | 70 | 114 | 175 | 324 | 116 | 46 | 48 | 28 | 13 |
| Jaguar | (IMI) | 2983 | 71 | 115 | 173 | 315 | 124 | 51 | 65 | 15 | 9 |
| 8C481 | | 3080 | 73 | 124 | 200 | 320 | 137 | 50 | 56 | 22 | 11 |
| 8C482 | | 3297 | 74 | 124 | 193 | 316 | 142 | 50 | 63 | 18 | 9 |
| RH 1122★ | | 3391 | 72 | 117 | 190 | 323 | 160 | 48 | 83 | 6 | 2 |
| Mean (All) | | 3042 | 72 | 117 | 186 | 335 | 128 | 52 | 58 | 20 | 11 |
| Mean (6946 & 9338) | | 3162 | 72 | 116 | 182 | 358 | 118 | 58 | 42 | 31 | 18 |
| Mean (6946 & IS 8048) | | 3110 | 71 | 115 | 181 | 367 | 119 | 57 | 42 | 32 | 17 |
| C.V. | | 16 | 2 | 3 | 7 | 4 | 1 | 7 | 17 | 29 | 51 |
| LSD 5% | | 411 | 1 | 3 | 10 | 10 | 9 | 3 | 8 | 5 | 5 |

★ - These hybrids had treated seed.

Table 9: Performance data from the Manitoba Confectionary Sunflower Co-op Trial 2006 (Altona).

| Hybrid | Yield (kg/ha) | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) | % Nut- meat | Seed Size % Over Screen | | | |
|----------------------------------|------------------|-------------------------|------------------------|-------------------------|--------------------------------|--------------------------|-------------------|-------------------------|-----------|-----------|-----------|
| | | | | | | | | >20 | 18-20 | 16-18 | |
| 6946 | (DE-1950) | 3443 | 76 | 115 | 200 | 350 | 125 | 59 | 57 | 30 | 10 |
| 9338 | (X5432) | 2683 | 78 | 119 | 210 | 342 | 114 | 54 | 51 | 29 | 14 |
| IS 8048 | | 2685 | 75 | 118 | 209 | 359 | 122 | 53 | 58 | 29 | 9 |
| Cougar | (X9985) | 2786 | 74 | 115 | 202 | 329 | 118 | 60 | 76 | 15 | 4 |
| 8C416 | (X91416) | 2549 | 77 | 119 | 224 | 307 | 114 | 49 | 71 | 17 | 6 |
| RH 112★ | (04EXP02) | 3423 | 77 | 119 | 216 | 310 | 144 | 47 | 91 | 7 | 1 |
| 130★ | | 2470 | 76 | 116 | 208 | 309 | 99 | 53 | 63 | 9 | 13 |
| Panther | | 2561 | 74 | 115 | 204 | 313 | 113 | 45 | 67 | 24 | 6 |
| Jaguar | (IMI) | 3038 | 74 | 116 | 199 | 304 | 131 | 51 | 83 | 11 | 4 |
| 8C481 | | 3061 | 77 | 120 | 229 | 311 | 148 | 48 | 77 | 17 | 3 |
| 8C482 | | 3205 | 78 | 121 | 220 | 310 | 148 | 49 | 77 | 15 | 4 |
| RH 1122★ | | 3528 | 76 | 118 | 213 | 311 | 160 | 47 | 91 | 7 | 2 |
| Mean (All) | | 2953 | 76 | 117 | 211 | 321 | 128 | 51 | 72 | 17 | 6 |
| Mean (6946 & 9338) | | 3063 | 77 | 117 | 205 | 346 | 119 | 57 | 54 | 29 | 12 |
| Mean (6946 & IS 8048) | | 3064 | 75 | 116 | 204 | 354 | 123 | 56 | 57 | 29 | 10 |
| C.V. | | 12 | 2 | 1 | 3 | 3 | 8 | 3 | 10 | 24 | 41 |
| LSD 5% | | 487 | 2 | 2 | 9 | 14 | 14 | 2 | 11 | 6 | 4 |

★ - These hybrids had treated seed.

Seeded: May 12th, 2006Harvested: October 2nd, 2006

Table 10: Performance data from the Manitoba Confectionary Sunflower Co-op Trial 2006 (Morden).

| Hybrid | Yield (kg/ha) | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) | % Nut- meat | Seed Size % Over Screen | | | |
|----------------------------------|------------------|-------------------------|------------------------|-------------------------|--------------------------------|--------------------------|-------------------|-------------------------|-----------|-----------|-----------|
| | | | | | | | | >20 | 18-20 | 16-18 | |
| 6946 | (DE-1950) | 4026 | 70 | 115 | 185 | 348 | 114 | 69 | 42 | 42 | 13 |
| 9338 | (X5432) | 3796 | 71 | 123 | 203 | 367 | 130 | 54 | 50 | 28 | 14 |
| IS 8048 | | 3810 | 69 | 117 | 201 | 378 | 131 | 52 | 56 | 32 | 9 |
| Cougar | (X9985) | 3549 | 68 | 118 | 181 | 329 | 130 | 59 | 74 | 18 | 4 |
| 8C416 | (X91416) | 3017 | 71 | 127 | 204 | 337 | 126 | 50 | 66 | 20 | 9 |
| RH 112★ | (04EXP02) | 4158 | 70 | 114 | 204 | 325 | 154 | 50 | 90 | 8 | 1 |
| 130★ | | 3140 | 71 | 113 | 194 | 335 | 121 | 53 | 55 | 15 | 11 |
| Panther | | 3166 | 68 | 114 | 180 | 315 | 111 | 46 | 44 | 41 | 11 |
| Jaguar | (IMI) | 3541 | 71 | 121 | 179 | 320 | 126 | 51 | 70 | 19 | 8 |
| 8C481 | | 3455 | 70 | 139 | 202 | 322 | 144 | 49 | 61 | 28 | 8 |
| 8C482 | | 3839 | 72 | 135 | 198 | 307 | 143 | 48 | 68 | 23 | 6 |
| RH 1122★ | | 3812 | 70 | 122 | 202 | 327 | 170 | 49 | 90 | 8 | 1 |
| Mean (All) | | 3609 | 70 | 121 | 194 | 334 | 133 | 52 | 64 | 24 | 8 |
| Mean (6946 & 9338) | | 3911 | 70 | 119 | 194 | 358 | 122 | 61 | 46 | 35 | 14 |
| Mean (6946 & IS 8048) | | 3918 | 69 | 116 | 193 | 363 | 122 | 60 | 49 | 37 | 11 |
| C.V. | | 13 | 2 | 2 | 10 | 3 | 7 | 10 | 11 | 20 | 41 |
| LSD 5% | | 653 | 2 | 4 | 28 | 15 | 14 | 7 | 10 | 7 | 5 |

★ - These hybrids had treated seed.

Seeded: May 15th, 2006

Harvested: October 19th, 2006

Table 11: Performance data from the Manitoba Confectionary Sunflower Co-op Trial 2006 (Minto).

| Hybrid | Yield (kg/ha) ❖ | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) | % Nut- meat | Seed Size % Over Screen | | | % Bird Damage | % Disease ■ | % Lodged Plants | |
|----------------------------------|--------------------|-------------------------|------------------------|-------------------------|--------------------------------|--------------------------|-------------------|-------------------------|-----------|-----------|---------------------|----------------|-----------------------|----------|
| | | | | | | | | >20 | 18-20 | 16-18 | | | | |
| 6946 | (DE-1950) | 2475 | 68 | 111 | 138 | 383 | 98 | 58 | 13 | 37 | 37 | 0 | 9 | 3 |
| 9338 | (X5432) | 2396 | 69 | 113 | 156 | 356 | 125 | 53 | 40 | 19 | 19 | 4 | 21 | 0 |
| IS 8048 | | 1989 | 68 | 113 | 154 | 383 | 126 | 52 | 25 | 24 | 24 | 4 | 35 | 0 |
| Cougar | (X9985) | 2574 | 68 | 109 | 142 | 362 | 117 | 56 | 45 | 11 | 11 | 0 | 10 | 1 |
| 8C416 | (X91416) | 2661 | 69 | 113 | 162 | 356 | 109 | 52 | 22 | 28 | 28 | 1 | 30 | 10 |
| RH 112★ | (04EXP02) | 2256 | 68 | 109 | 161 | 333 | 137 | 49 | 60 | 5 | 5 | 0 | 24 | 3 |
| 130★ | | 2425 | 70 | 108 | 155 | 348 | 101 | 53 | 37 | 14 | 14 | 1 | 14 | 4 |
| Panther | | 2261 | 68 | 114 | 143 | 344 | 123 | 46 | 34 | 20 | 20 | 1 | 17 | 4 |
| Jaguar | (IMI) | 2165 | 69 | 110 | 141 | 322 | 116 | 50 | 43 | 16 | 16 | 0 | 29 | 0 |
| 8C481 | | 2604 | 71 | 115 | 168 | 326 | 119 | 52 | 30 | 22 | 22 | 1 | 10 | 1 |
| 8C482 | | 2697 | 71 | 116 | 162 | 329 | 135 | 52 | 45 | 17 | 17 | 1 | 10 | 3 |
| RH 1122★ | | 2273 | 69 | 112 | 157 | 332 | 151 | 48 | 67 | 4 | 4 | 0 | 22 | 5 |
| Mean (All) | | 2404 | 69 | 112 | 153 | 348 | 121 | 52 | 38 | 18 | 18 | 1 | 19 | 3 |
| Mean (6946 & 9338) | | 2435 | 69 | 112 | 147 | 369 | 111 | 55 | 26 | 28 | 28 | 2 | 15 | 2 |
| Mean (6946 & IS 8048) | | 2232 | 68 | 112 | 146 | 383 | 112 | 55 | 19 | 31 | 31 | 2 | 22 | 2 |
| C.V. | | 17 | 1 | 1 | 3 | 3 | 6 | 4 | 25 | 26 | 26 | 167 | 85 | 149 |
| LSD 5% | | 686 | 1 | 1 | 6 | 16 | 11 | 3 | 14 | 7 | 7 | 3 | 24 | 6 |

★ - This hybrid had treated seed.

❖ - Yield is adjusted for bird damage.

■ - Percent disease is based on natural infection.

Seeded: May 25th, 2006

Harvested: October 18th, 2006

Table 12: Performance data from the Manitoba Confectionary Sunflower Co-op Trials, candidate and check hybrids, 2005 and 2006 combined.

| Hybrid | Year * | Yield (kg/ha) | Days to 80% Bloom | Days to Maturity | Plant Height (cm) | Kernel Density (g/litre) | Kernel Weight (mg) | % Nut- meat | Seed Size % Over Screen | | |
|------------------|-----------------------|------------------|-------------------------|------------------------|-------------------------|--------------------------------|--------------------------|-------------------|-------------------------|-----------|-----------|
| | | | | | | | | | >20 | 18-20 | 16-18 |
| Cougar (X9985) | 2005 (3) [★] | 3829 | 75 | 118 | 166 | 309 | 146 | 55 | 86 | 7 | 2 |
| | 2006 (3) | 3006 | 70 | 114 | 175 | 340 | 122 | 58 | 65 | 15 | 7 |
| | Mean | 3418 | 73 | 116 | 171 | 325 | 134 | 57 | 76 | 11 | 5 |
| 8C416 (X91416) | 2005 (3) | 3299 | 78 | 120 | 188 | 322 | 137 | 52 | 61 | 23 | 8 |
| | 2006 (3) | 2750 | 72 | 120 | 196 | 333 | 117 | 50 | 53 | 22 | 14 |
| | Mean | 3025 | 75 | 120 | 192 | 328 | 127 | 51 | 57 | 23 | 11 |
| RH 112 (04EXP02) | 2005 (3) [★] | 3877 | 76 | 119 | 182 | 309 | 167 | 48 | 88 | 8 | 2 |
| | 2006 (3) [★] | 3372 | 72 | 114 | 194 | 323 | 145 | 49 | 80 | 7 | 3 |
| | Mean | 3625 | 74 | 117 | 188 | 316 | 156 | 49 | 84 | 8 | 3 |
| 13O | 2005 (3) [★] | 3863 | 75 | 116 | 183 | 305 | 127 | 54 | 71 | 10 | 7 |
| | 2006 (3) [★] | 2701 | 72 | 113 | 185 | 333 | 107 | 53 | 52 | 13 | 13 |
| | Mean | 3282 | 74 | 115 | 184 | 319 | 117 | 54 | 62 | 12 | 10 |
| 6946 (DE-1950) | 2005 (3) [★] | 4088 | 78 | 116 | 175 | 327 | 127 | 58 | 69 | 21 | 6 |
| | 2006 (3) | 3315 | 71 | 113 | 174 | 360 | 112 | 62 | 37 | 36 | 20 |
| | Mean | 3701 | 74 | 115 | 174 | 343 | 120 | 60 | 53 | 28 | 13 |
| 9338 (X5432) | 2005 (3) | 3695 | 76 | 122 | 185 | 353 | 141 | 54 | 62 | 21 | 9 |
| | 2006 (3) | 3009 | 72 | 118 | 189 | 355 | 123 | 54 | 47 | 25 | 16 |
| | Mean | 3352 | 74 | 120 | 187 | 354 | 132 | 54 | 55 | 23 | 12 |

• - Value between parentheses is the number of trials tested per year.

★ - These varieties had treated seed.

Table 13: Disease reactions of the Manitoba Sunflower Co-operative Trial 2006.

| Hybrids | Mean Rust Index* | | | | Verticillium* | % Resistance* | | % Survivor [◇] | |
|---------------------|------------------|------------|-----------|------------|---------------|---------------|-----------|-------------------------|-----------|
| | Race 2 | | Race 3 | | Wilt Index | Downy Mildew | | Sclerotinia | |
| | Score | Class | Score | Class | Nursery | Race 2 | Race 3 | With Inoculum | |
| Oil Type | | | | | | | | | |
| Checks | | | | | | | | | |
| 6111 | | 5.0 | HS | 5.0 | HS | 2.4 | 50 | 10 | 15 |
| 63M52 | (XF306) | 4.0 | S | 5.0 | HS | 2.2 | 85 | 0 | 25 |
| 3 Year Entry | | | | | | | | | |
| Defender Plus | (X6519) | 4.0 | S | 4.0 | S | 2.8 | 77 | 100 | 25 |
| 2 Year Entry | | | | | | | | | |
| Defender HO | (X6506) | 4.0 | S | 4.0 | S | 2.9 | 86 | 96 | 19 |
| 8H288DM | | 5.0 | HS | 5.0 | HS | 2.5 | 79 | 100 | 17 |
| 8H350DM | | 5.0 | HS | 4.0 | S | 2.4 | 85 | 100 | 14 |
| 8N270 | | 5.0 | HS | 5.0 | HS | 2.5 | 5 | 0 | 13 |
| 8N272 | | 5.0 | HS | 5.0 | HS | 2.6 | 0 | 0 | 19 |
| YF3425 | (XF3425) | 5.0 | HS | 5.0 | HS | 2.4 | 60 | 0 | 9 |
| 1 Year Entry | | | | | | | | | |
| VIPER | (IMI) | 5.0 | HS | 4.0 | S | 2.4 | 65 | 3 | 7 |
| X9765 | (IMI) | 4.0 | S | 5.0 | HS | 2.2 | 94 | 82 | 13 |
| 8N453DM | | 4.0 | S | 5.0 | HS | 2.1 | 69 | 81 | 19 |
| 8N337DM | | 4.0 | S | 5.0 | HS | 2.3 | 100 | 100 | 15 |
| 8N386CL | (IMI) | 3.0 | MS | 5.0 | HS | 2.4 | 60 | 7 | 10 |
| MH4436* | | 5.0 | HS | 5.0 | HS | 2.3 | 19 | 93 | 68 |
| 305* | | 4.0 | S | 4.0 | S | 2.2 | 59 | 88 | 100 |
| 343* | | 4.0 | S | 5.0 | HS | 2.2 | 82 | 89 | 95 |
| Non-Oil Type | | | | | | | | | |
| Checks | | | | | | | | | |
| 6946 | (DE-1950) | 2.0 | MR | 5.0 | HS | 2.4 | 67 | 0 | 18 |
| 9338 | (X5432) | 1.0 | R | 5.0 | HS | 3.0 | 59 | 0 | 10 |
| IS 8048 | | 1.0 | R | 5.0 | HS | 3.0 | 55 | 13 | 18 |
| 4 Year Entry | | | | | | | | | |
| Cougar | (X9985) | 4.0 | S | 5.0 | HS | 2.9 | 45 | 4 | 19 |
| 8C416 | (X91416) | 4.0 | S (sg) | 5.0 | HS | 3.1 | 72 | 7 | 11 |
| 2 Year Entry | | | | | | | | | |
| RH 112* | (04EXP02) | 1.0 | R | 4.0 | S (sg) | 3.0 | 37 | 0 | 78 |
| 130* | | 1.0 | R | 5.0 | HS | 3.1 | 26 | 2 | 43 |
| 1 Year Entry | | | | | | | | | |
| Panther | | 1.0 | R | 4.0 | S | 3.2 | 69 | 5 | 27 |
| Jaguar | (IMI) | 1.0 | R | 5.0 | HS | 2.6 | 62 | 6 | 39 |
| 8C481 | | 4.0 | S | 5.0 | HS | 2.5 | 14 | 0 | 11 |
| 8C482 | | 4.0 | S | 5.0 | HS | 2.4 | 25 | 6 | 22 |
| RH 1122* | | 1.0 | R | 5.0 | HS | 2.8 | 18 | 3 | 92 |

★ - These hybrids had treated seed.

♣ - Reaction to rust races 2 and 3 under growth room controlled conditions. Disease Index 1-5 based on % leaf area infected; 0-1=highly resistant(0-5%); 2=moderately resistant (5-10%); 3=moderately susceptible (10-30%); 4=susceptible (30-50%); and 5=susceptible (>50%); MR=Resistant to Race 2, Susceptible to Race 3; S & HS=Susceptible to both races.

* - Field reaction to Verticillium wilt in naturally infested soil. Indices of 1 (healthy), 2(mild), 3 (moderate), 4 severe),and 5(dead) were assigned; the mean disease index was obtained by multiplying the number of plants in each class by the corresponding index, and the total divided by the total number of plants.

★ - Reaction to downy mildew races 2 and 3 under controlled conditions in growth rooms.

◇ - Field reaction to early Sclerotinia infection using artificial inoculum at Morden, as a percent of the control.

Table 14: Mean disease reactions of the Manitoba Oilseed Sunflower Co-operative Trial (2005 - 2006)

| Hybrids | Year | Mean Rust Index* | | | Verticillium* | | % Resistance* | | |
|--------------------------|-------------|------------------|------------|-----------|---------------|-----------|---------------|------------|-----------|
| | | Race | | Class | Wilt | | Downy Mildew | | |
| | | 2 | 3 | | Index | Class | Race | | Class |
| | | | | | | | 2 | 3 | Class |
| Oil Type | | | | | | | | | |
| Checks | | | | | | | | | |
| 6111 | 2005 | 4.0 | 5.0 | | 3.2 | | 73 | 0 | |
| | 2006 | 5.0 | 5.0 | | 2.4 | | 50 | 10 | |
| | Mean | 4.5 | 5.0 | HS | 2.8 | MS | 62 | 5 | MS |
| 63M52 (XF306) | 2005 | 2.0 | 5.0 | | 2.8 | | 85 | 9 | |
| | 2006 | 4.0 | 5.0 | | 2.2 | | 85 | 0 | |
| | Mean | 3.0 | 5.0 | S | 2.5 | MR | 85 | 5 | MR |
| Candidate Hybrids | | | | | | | | | |
| Defender Plus (X6519) | 2005 | 5.0 | 5.0 | | 3.5 | | 100 | 100 | |
| | 2006 | 4.0 | 4.0 | | 2.8 | | 77 | 100 | |
| | Mean | 4.5 | 4.5 | HS | 3.2 | MS | 89 | 100 | HR |
| Defender HO (X6506) | 2005 | 5.0 | 5.0 | | 3.3 | | 96 | 100 | |
| | 2006 | 4.0 | 4.0 | | 2.9 | | 86 | 96 | |
| | Mean | 4.5 | 4.5 | HS | 3.1 | MS | 91 | 98 | HR |
| 8H288DM | 2005 | 5.0 | 5.0 | | 3.0 | | 100 | 100 | |
| | 2006 | 5.0 | 5.0 | | 2.5 | | 79 | 100 | |
| | Mean | 5.0 | 5.0 | HS | 2.8 | MS | 90 | 100 | HR |
| 8H350DM | 2005 | 5.0 | 5.0 | | 2.8 | | 96 | 92 | |
| | 2006 | 5.0 | 4.0 | | 2.4 | | 85 | 100 | |
| | Mean | 5.0 | 4.5 | HS | 2.6 | MR | 91 | 96 | HR |
| 8N270 | 2005 | 5.0 | 4.0 | | 3.4 | | 0 | 2 | |
| | 2006 | 5.0 | 5.0 | | 2.5 | | 5 | 0 | |
| | Mean | 5.0 | 4.5 | HS | 3.0 | MS | 3 | 1 | HS |
| 8N272 | 2005 | 5.0 | 5.0 | | 3.1 | | 0 | 4 | |
| | 2006 | 5.0 | 5.0 | | 2.6 | | 0 | 0 | |
| | Mean | 5.0 | 5.0 | HS | 2.9 | MS | 0 | 2 | HS |
| YF3425 (XF3425) | 2004 | 5.0 | 5.0 | | 2.6 | | 75 | 0 | |
| | 2006 | 5.0 | 5.0 | | 2.4 | | 60 | 0 | |
| | Mean | 5.0 | 5.0 | HS | 2.5 | MR | 68 | 0 | MS |

❖ - Reaction to rust races 2 and 3 under growth room controlled conditions. Disease Index 1-5 based on % leaf area infected; 0-1=highly resistant(0-5%); 2=moderately resistant (5-10%); 3=moderately susceptible (10-30%); 4=susceptible (30-50%); and 5=susceptible (>50%); MR=Resistant to Race 2, Susceptible to Race 3; S & HS=Susceptible to both races.

* - Field reaction to Verticillium wilt in naturally infested soil. Indices of 1 (healthy), 2(mild), 3 (moderate), 4 severe),and 5(dead) were assigned; the mean disease index was obtained by multiplying the number of plants in each class by the corresponding index, and the total divided by the total number of plants.

* - Reaction to downy mildew races 2 and 3 under controlled conditions in growth rooms.

Table 15: Mean disease reactions of the Manitoba Confectionary Sunflower Co-operative Trial (2005 - 2006)

| Hybrids | Year | Mean Rust Index* | | | Verticillium* | | % Resistance* | | | |
|--------------------------|-----------|------------------|------------|------------|---------------|------------|---------------|-----------|----------|-----------|
| | | Race | | Class | Wilt | | Downy Mildew | | | |
| | | 2 | 3 | | Index | Class | Race | | Class | |
| | | | | | | | 2 | 3 | Class | |
| Non-Oil Type | | | | | | | | | | |
| Checks | | | | | | | | | | |
| 6946 | (DE-1950) | 2005* | 4.0 | 5.0 | | 3.1 | | 7 | 4 | |
| | | 2006 | 2.0 | 5.0 | | 2.4 | | 67 | 0 | |
| | | Mean | 3.0 | 5.0 | S | 2.8 | MS | 37 | 2 | HS |
| 9338 | (X5432) | 2005 | 2.0 | 4.0 | | 3.4 | | 52 | 0 | |
| | | 2006 | 1.0 | 5.0 | | 3.0 | | 59 | 0 | |
| | | Mean | 1.5 | 4.5 | MS | 3.2 | MS | 56 | 0 | S |
| Candidate Hybrids | | | | | | | | | | |
| Cougar | (X9985) | 2005* | 5.0 | 5.0 | | 3.6 | | 22 | 4 | |
| | | 2006 | 4.0 | 5.0 | | 2.9 | | 45 | 4 | |
| | | Mean | 4.5 | 5.0 | HS | 3.3 | MS | 34 | 4 | HS |
| 8C416 | (X91416) | 2005 | 5.0 | 5.0 | | 3.5 | | 41 | 0 | |
| | | 2006 | 4.0 | 5.0 | | 3.1 | | 72 | 7 | |
| | | Mean | 4.5 | 5.0 | HS | 3.3 | MS | 57 | 4 | S |
| RH112 | (04EXP02) | 2005* | 1.0 | 4.0 | | 3.3 | | 0 | 0 | |
| | | 2006* | 1.0 | 4.0 | | 3.0 | | 37 | 0 | |
| | | Mean | 1.0 | 4.0 | MS | 3.2 | MS | 19 | 0 | HS |
| 130 | | 2005* | 1.0 | 5.0 | | 4.0 | | 5 | 5 | |
| | | 2006* | 1.0 | 5.0 | | 3.1 | | 26 | 2 | |
| | | Mean | 1.0 | 5.0 | MS | 3.6 | MS | 16 | 4 | HS |

★ - These varieties had treated seed.

♣ - Reaction to rust races 2 and 3 under growth room controlled conditions. Disease Index 1-5 based on % leaf area infected; 0-1=highly resistant(0-5%); 2=moderately resistant (5-10%); 3=moderately susceptible (10-30%); 4=susceptible (30-50%); and 5=susceptible (>50%); MR=Resistant to Race 2, Susceptible to Race 3; S & HS=Susceptible to both races.

* - Field reaction to Verticillium wilt in naturally infested soil. Indices of 1 (healthy), 2(mild), 3 (moderate), 4 severe),and 5(dead) were assigned; the mean disease index was obtained by multiplying the number of plants in each class by the corresponding index, and the total divided by the total number of plants.

* - Reaction to downy mildew races 2 and 3 under controlled conditions in growth rooms.