Fig. 2. Model for net breeding gain in blackleg resistance (+0.13 resistance units per year) in Australian canola breeding programs from 1970 to 2000, with a simultaneous erosion of polygenic resistance of −0.15 resistance units per year (from Table 2). The "final" resistance rating occurs after an average of 4 years of testing (from Table 2), at which time the variety has lost 0.6 resistance units. 1996 varieties have an average final blackleg rating of 5.6 (from Table 1), and 1970 varieties are assumed to have an average final blackleg resistance rating of 1.6. Blackleg resistance varies from 0 (very susceptible, VS) to 9 (very resistant, VR).

Cowling, W.A.  2007.  Genetic diversity in Australian canola and implications for crop breeding for changing future environments. Field Crops Research 104:103–111.

# Trilogy – what's going on?

- 2007 published rating = MR (2004-5-6)
- 2008 published rating = MS (2005-6-7)
- 2009 published rating = MR (2006-7-8)

- Data missing in 2006
- Artifact of method of analysis? (3-year rolling data)

| site.no | site | ybar | gvar | load1 | load2 | | site.no | [,1] | [,2] | [,3] | [,4] | [,5] | [,6] | [,7] | [,8] | [,9] | [,10] |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | GrassFlat_2006 | 6.047 | 2.5437 | 0.8268 | -0.8814 | | [1,] | 1 | 0.273 | 0.2 | 0.239 | 0.471 | -0.046 | 0.24 | 0.527 | 0.537 | 0.686 |
| 2 | Laharum-AgSeed_2006 | 7.924 | 0.332 | 0.497 | 0.1814 | | [2,] | 0.273 | 1 | 0.873 | 0.906 | 0.55 | 0.112 | 0.711 | 0.714 | 0.801 | 0.686 |
| 3 | Laharum-nutrihealth_2006 | 6.639 | 1.0897 | 0.89 | 0.4562 | | [3,] | 0.2 | 0.873 | 1 | 0.947 | 0.519 | 0.13 | 0.734 | 0.689 | 0.782 | 0.631 |
| 4 | LakeBolac_2006 | 7.09 | 2.726 | 1.4851 | 0.6802 | | [4,] | 0.239 | 0.906 | 0.947 | 1 | 0.557 | 0.13 | 0.762 | 0.733 | 0.828 | 0.684 |
| 5 | MtBarker_2006 | 4.788 | 2.1171 | 1.0279 | -0.2758 | | [5,] | 0.471 | 0.55 | 0.519 | 0.557 | 1 | 0.024 | 0.469 | 0.644 | 0.689 | 0.727 |
| 6 | ShentonPark_2006 | 6.834 | 1.7439 | 0.0984 | 0.2014 | | [6,] | -0.046 | 0.112 | 0.13 | 0.13 | 0.024 | 1 | 0.093 | 0.045 | 0.06 | 0.013 |
| 7 | BlackRange_2007 | 5.52 | 2.2127 | 1.0885 | 0.3748 | | [7,] | 0.24 | 0.711 | 0.734 | 0.762 | 0.469 | 0.093 | 1 | 0.608 | 0.68 | 0.587 |
| 8 | ClearLake_2007 | 7.36 | 1.9452 | 1.2213 | -0.1835 | | [8,] | 0.527 | 0.714 | 0.689 | 0.733 | 0.644 | 0.045 | 0.608 | 1 | 0.847 | 0.863 |
| 9 | Laharum_2007 | 6.676 | 0.7819 | 0.845 | -0.0667 | | [9,] | 0.537 | 0.801 | 0.782 | 0.828 | 0.689 | 0.06 | 0.68 | 0.847 | 1 | 0.916 |
| 10 | MtBarker_2007 | 7.558 | 0.3735 | 0.568 | -0.2254 | | [10,] | 0.686 | 0.686 | 0.631 | 0.684 | 0.727 | 0.013 | 0.587 | 0.863 | 0.916 | 1 |
| 11 | Mininera_2007 | 6.268 | 3.3924 | 1.5203 | 0.9637 | | [11,] | 0.139 | 0.877 | 0.932 | 0.958 | 0.484 | 0.141 | 0.736 | 0.654 | 0.749 | 0.574 |
| 12 | Mininera-Nuseed_2007 | 6.795 | 2.1969 | 1.2338 | 0.7631 | | [12,] | 0.147 | 0.88 | 0.935 | 0.961 | 0.49 | 0.141 | 0.739 | 0.661 | 0.757 | 0.584 |
| 13 | Moyhall_2007 | 3.541 | 2.9275 | 1.4757 | 0.3303 | | [13,] | 0.34 | 0.805 | 0.82 | 0.855 | 0.573 | 0.094 | 0.68 | 0.73 | 0.81 | 0.731 |
| 14 | Wangary_2007 | 3.422 | 2.3524 | 1.2177 | -0.6576 | | [14,] | 0.649 | 0.55 | 0.489 | 0.538 | 0.642 | -0.006 | 0.473 | 0.752 | 0.791 | 0.896 |
| 15 | Wonwondah_2007 | 6.714 | 1.4668 | 0.9366 | 0.2457 | | [15,] | 0.289 | 0.731 | 0.748 | 0.779 | 0.508 | 0.089 | 0.617 | 0.65 | 0.724 | 0.644 |
| 16 | Harefield_2008 | 8.943 | 0.4404 | 0.4947 | -0.0369 | | [16,] | 0.417 | 0.626 | 0.611 | 0.648 | 0.537 | 0.047 | 0.531 | 0.66 | 0.717 | 0.713 |
| 17 | Laharum-Nuseed_2008 | 7.524 | 1.4151 | 0.7473 | -0.9256 | | [17,] | 0.756 | 0.297 | 0.196 | 0.245 | 0.591 | -0.072 | 0.264 | 0.653 | 0.659 | 0.871 |
| 18 | Laharum-PacSeeds_2008 | 7.356 | 3.6547 | 1.2909 | -0.7886 | | [18,] | 0.578 | 0.453 | 0.395 | 0.437 | 0.555 | -0.013 | 0.39 | 0.646 | 0.676 | 0.78 |
| 19 | LakeBolac_2008 | 5.994 | 3.4402 | 0.8861 | -1.5298 | | [19,] | 0.703 | 0.152 | 0.047 | 0.09 | 0.494 | -0.09 | 0.142 | 0.527 | 0.519 | 0.748 |
| 20 | Moyhall_2008 | 5.145 | 4.2402 | 1.3964 | 0.8137 | | [20,] | 0.133 | 0.709 | 0.751 | 0.773 | 0.404 | 0.111 | 0.596 | 0.542 | 0.618 | 0.485 |
| 21 | Marrar_2008 | 8.535 | 0.4987 | 0.539 | -0.1617 | | [21,] | 0.522 | 0.586 | 0.551 | 0.592 | 0.583 | 0.022 | 0.501 | 0.699 | 0.747 | 0.794 |
| 22 | Toodyay_2008 | 6.285 | 0.062 | 0.1894 | 0.1302 | | [22,] | 0.105 | 0.821 | 0.877 | 0.899 | 0.438 | 0.136 | 0.688 | 0.597 | 0.687 | 0.514 |
| 23 | Wangary_2008 | 6.758 | 1.5522 | 0.8726 | -0.8339 | | [23,] | 0.733 | 0.393 | 0.305 | 0.354 | 0.622 | -0.05 | 0.344 | 0.701 | 0.72 | 0.898 |
| 24 | BlackRange_2008 | 7.804 | 1.0203 | 1.0061 | -0.0891 | | [24,] | 0.565 | 0.832 | 0.811 | 0.86 | 0.72 | 0.061 | 0.707 | 0.884 | 0.959 | 0.958 |
| 25 | Wonwondah_2008 | 6.352 | 1.8452 | 1.1981 | 0.284 | | [25,] | 0.342 | 0.827 | 0.843 | 0.879 | 0.583 | 0.098 | 0.698 | 0.745 | 0.827 | 0.743 |
| 26 | Wonwondah-Nuseed_2008 | 7.067 | 1.7522 | 1.2071 | -0.2901 | | [26,] | 0.594 | 0.718 | 0.682 | 0.73 | 0.686 | 0.035 | 0.612 | 0.827 | 0.888 | 0.928 |

**Genetic correlations between blackleg trials for 2005-2007**