



The Phenomenal 'Phenomenal': The Cultivar Developed in Queensland over a Hundred Years Ago Used in Disease Resistance Research Today

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Context of Investigation:

- 'Phenomenal' was a significant cultivar in subtropical Queensland during mid last century.
- Despite 'Phenomenal's' importance, prior to our investigation we found no reliable reports of its origin or history.
- Because of 'Phenomenal's' historical significance in the strawberry industry and its current scientific interest, we investigated its origins.
- The components of its origins we were most interested in included the breeder, the location of breeding, and the parentage of 'Phenomenal'.



Fig. 1 'Phenomenal' was promoted as the major attraction at Flay's farm. Source: Trove

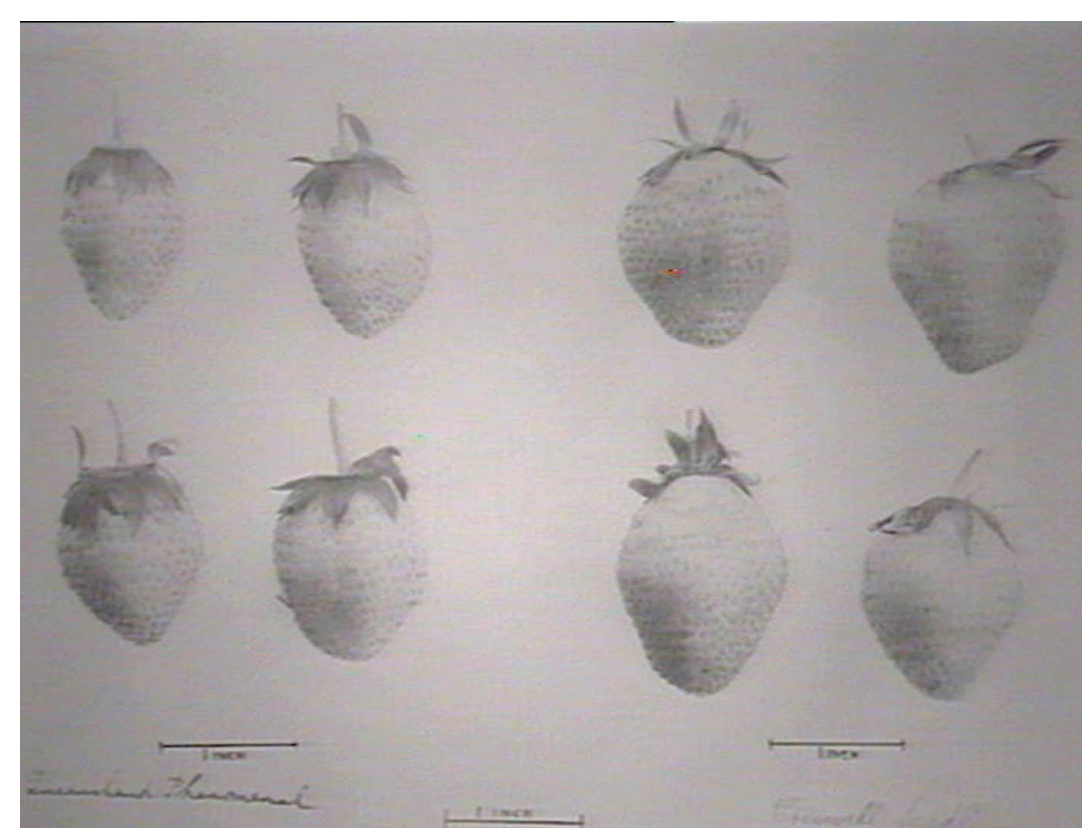


Fig. 2 'Phenomenal' was the basis of the strawberry industry of Queensland. Source: State Library of New South Wales, [IE1804014]

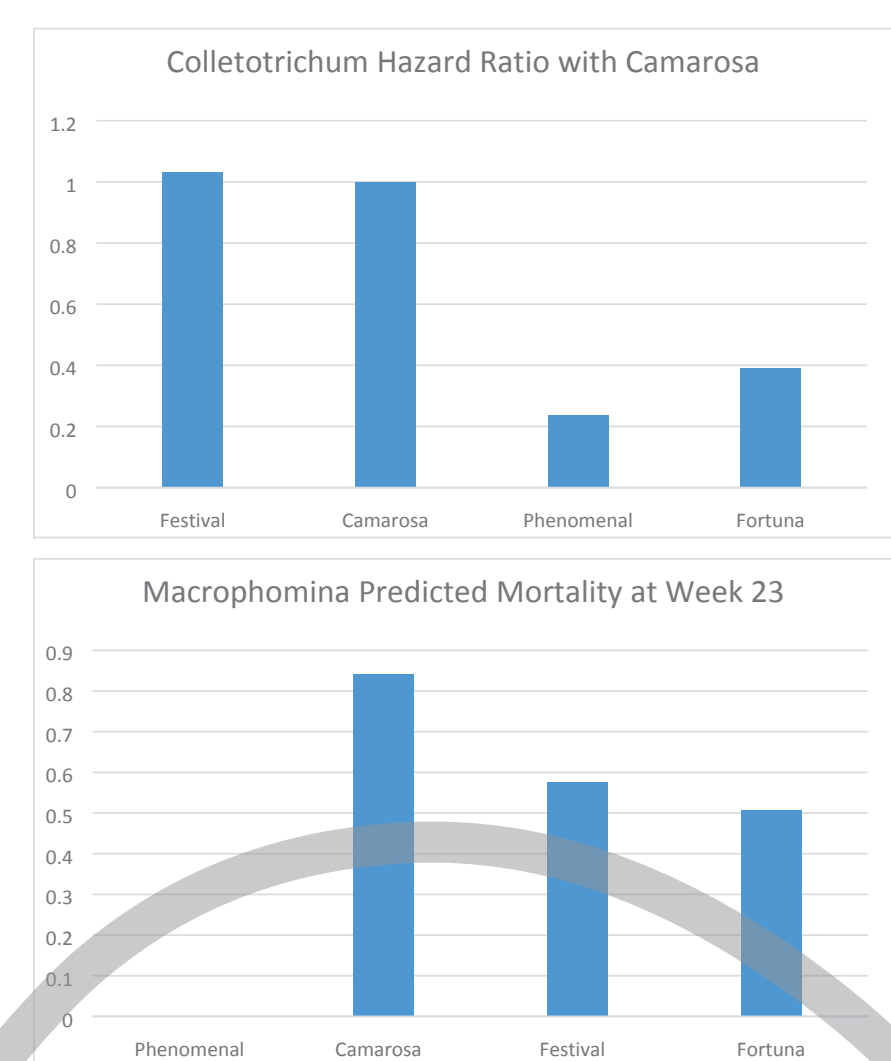


Fig. 3 'Phenomenal' carries resistance to a number of soil borne diseases.

Method of Investigation:

We conducted interviews, searched the internet (mainly through Trove, the National Library of Australia) for local newspaper articles for the period 1890 to 1950, and searched scientific literature.

Results of Investigation:

- As early as the 1890's, it was believed that 'strawberries with flavour to tempt the Englishman's palate'¹ could not be grown in subtropical Queensland, Australia.
- Yet, in 1906-1907, in the town of Chatsworth, a locality in the Gympie region, Queensland (26° 14'S, 152° 61'E) situated 170 kilometres north of Brisbane, the 'Phenomenal' variety of strawberry was developed.
- 'Phenomenal' was bred by Charles A. Flay after 7 years in experimental trials².
- 'Phenomenal' resulted from a cross between 'Federator', {also known as 'Richard Gilbert'} and 'Pink's Prolific'³.
- 'Phenomenal' was noted for its superb flavour, good colouring, and the fruit being more numerous than the leaves⁴.
- In 1908, this strawberry was promoted as the major attraction at Flay's farm, 'Green Park', in Chatsworth.
- By 1946, 'Phenomenal' "was the basis for the strawberry industry of Queensland and the leading variety of the state", according to Mr N Morgan, Senior Advisor in Horticulture⁵.
- 'Phenomenal' is in the ancestry of 'Majestic', 'Redlands Crimson', 'Earlisweet' and 'Kabala' which were also significant cultivars in Queensland until the late 1990's.
- 'Phenomenal' has recently been found to carry resistance to a number of soil borne diseases of local significance.
- 'Phenomenal' has been found to have high levels of resistance to *Colletotrichum gloeosporioides* and *Macrophomina phaseolina*, when compared to 'Camarosa'.
- Based on an analysis of hazard ratios, 'Camarosa' and 'Festival' are equally susceptible to *Colletotrichum gloeosporioides*, whereas 'Phenomenal' is only 24% as likely to die as 'Camarosa'⁶. Furthermore 'Phenomenal' showed 0% mortality from *Macrophomina phaseolina*, 23 weeks after inoculation compared with 84% mortality in 'Camarosa'⁷.

Discussion and Conclusion:

- Private breeders such as Charles A. Flay, paved the way for the strawberry breeding programs which currently continue in research facilities in various parts of the world. In Australia, central to this work is breeding by the Australian National Strawberry Breeding Program (ANSBP) team which is headquartered at the Department of Agriculture and Fisheries, Nambour.
- The disease resistance of 'Phenomenal' may be useful in developing new resistant varieties, and so 'Phenomenal' continues to be a phenomenal strawberry variety.



Fig. 4 'Phenomenal' continues to be a phenomenal strawberry variety.

References

- ¹ Queenslander, 24/10/1891, p. 788. Retrieved from, trove.nla.gov.au
- ² Queenslander, 24/8/1907, p. 43. Retrieved from, trove.nla.gov.au
- ³ Nambour Chronicle and North Coast Advertiser, 24/5/1929, p. 4. Retrieved from, trove.nla.gov.au
- ⁴ Gympie Times and Mary River Gazette, 24/8/1907, p. 3. Retrieved from, trove.nla.gov.au
- ⁵ Nambour Chronicle and North Coast Advertiser, 19/7/1946, p. 8. Retrieved from, trove.nla.gov.au
- ⁶ Neal, J.M., Ko, H.L., Gomez, A.O., De Faveri, J., Verbyla, A., Mayer, R., Herrington, M.E., (2017) Testing strawberry genotypes for resistance to *Colletotrichum gloeosporioides* in Queensland. Acta Horticulturae 1156, 743-750.
- ⁷ Gomez, A.O., De Faveri, J., Neal, J., Herrington, M.E. & Aitken, E.A.B. (2017). [Pathogenicity studies of *Macrophomina* on strawberry in Queensland]. Unpublished raw data.

Fig. 1 Gympie Times and Mary River Mining Gazette, 5/9/1908. Green Park Strawberry Advertisement.

Fig. 2 State Library of New South Wales [IE1804014]. 1928. Strawberries. 'Queensland Phenomenal' and 'Creswell Seedling'. Dry Plate, 8.5x6.5in.