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Genetically modified canola trials in 2009

Department of Agriculture and Food, Western Australia

Department of Agriculture and Food

GOVERNMENT OF WESTERN AUSTRALIA

Genetically Modified Canola Trials in 2009

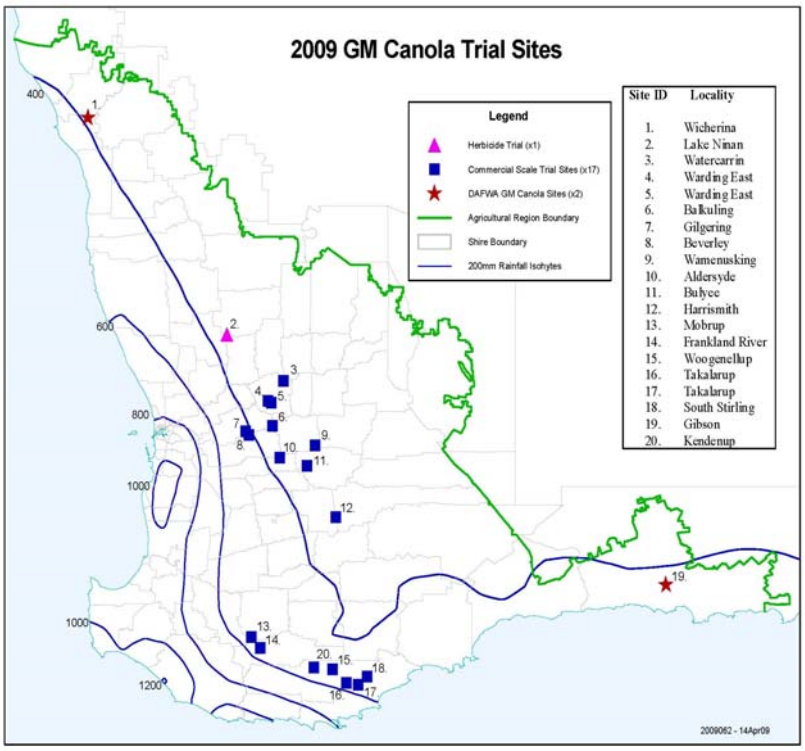
During 2009, just over 860 hectares of Roundup Ready® canola were grown in Western Australia enabled by an exemption order under the *Genetically Modified Crops Free Areas Act 2003.* The aim of the trials was to establish whether GM canola could be segregated from non-GM canola along the WA supply chain, and whether GM canola was agronomically viable for WA farming systems.

This was the first time genetically modified canola had been grown on a commercial scale in WA - earlier exemptions for smaller trials had been for variety testing and scientific purposes.

Under the exemption order, up to 1000 hectares of GM canola was permitted to be grown on up to 20 sites, with no site being larger than 70 hectares. Of the sites selected, 17 were in traditional canola growing areas on commercial properties and ranged from 30 to 70 hectares.

Two smaller sites of 7 and 15 hectares respectively, were located at Department of Agriculture and Food research facilities near Geraldton and Esperance. A small additional site on a commercial property near Wongan Hills was planted by Nufarm to test effectiveness of the Roundup Ready herbicide on wild radish and to compare yields from different herbicide tolerant canola systems. The trials at this site were discontinued in July 2009 following poor and uneven germination due to lack of seasonal rainfall, with all canola plants on the site being sprayed out.

Locations of all sites are shown in the map below.



All growers involved in the trials attended accreditation sessions run by Monsanto (owners of the Roundup Ready technology) before seed orders could be placed. They were also required to inform their neighbours about their GM canola crops and follow crop management and herbicide resistance management plans.

The role of the department was to approve the design and conduct of each proposed planting, ensure the program complied with the exemption orders and to prepare a final report on all trial outcomes for the Minster for Agriculture and Food. The department appointed four officers authorised to monitor compliance with the conditions of the exemption order, and to assist in general facilitation of the trials.

Four seed companies supplied five varieties of Roundup Ready canola for the trial sites. These were Nufarm (open-pollinated GT61 variety sown at six sites); Pacific Seeds (Hyola 502RR and 601RR hybrids at six sites); Pioneer (46Y20 hybrid at five sites); and Canola Breeders Western Australia (CHYB-166RR hybrid grown at two sites).

All of the commercial sites were planted between 22 April and 26 May 2009. Fifteen growers planted their canola crops dry because of a late start to the season, and with the knowledge that glyphosate could be used for weed management in the crop.

The crop management plan for Roundup Ready canola recommends application of up to two sprays of Roundup Ready herbicide, the first at the two-leaf stage and then again no later than the six-leaf stage. Fourteen of the growers used the two sprays, but individual circumstances meant that five growers only used one.

Several growers commented on the need for closer monitoring of canola crops using this technology because of more vigorous crop growth than other canola varieties and the risk of missing the spraying window. Spraying is not recommended after the six-leaf stage as the herbicide may cause crop damage.

The most northerly site, the department's research annexe at Wicherina east of Geraldton, was the first to be harvested on 23 October 2009. The first commercial farmer trial was harvested on 5-6 November and all GM canola was delivered to CBH by 4 January 2010. Most growers swathed canola crops before harvest but some direct-headed their crops.

The total harvest of 1223 tonnes was transported by truck to two CBH receival points - Metro Grains Centre at Forrestfield and Mount Kokeby between Brookton and Beverley. Yields ranged from 0.7 tonnes per hectare at Watercarrin near Cunderdin to 2.0 tonnes per hectare at South Stirling. Oil content ranged from 41.3 per cent at Gilgering near Beverley to 47.6 per cent at South Stirling (also the highest yield). Details are provided in the table below. The GM canola was marketed overseas by Grain Pool.



Commercial-scale plantings under the 2009 GM Canola trials program

Locality	Area planted[a] (ha)	Variety	Supplier	Yield[b] (t/ha)	Oil content[c] (%)
Aldersyde	24.17	CHYB-166RR	CBWA	0.96	44.4
Beverley	51.47	Hyola 502RR, Hyola 601RR	Pacific	1.77	44.0, 42.0
Bulyee	42.24	GT61	Nuseed	1.22	42.0, 41.8, 42.8
Warding East	52.40	Hyola 502RR	Pacific	1.55	45.6, 45.6
Warding East	31.50	CHYB-166RR	CBWA	1.36	43.6
Watercarrin	44.24	GT61	Nuseed	0.69	45.0
Harrismith	23.00	GT61	Nuseed	1.25	44.8
Wicherina	7.00	GT61	Nuseed	1.18	42.0
Frankland	58.99	46Y20(RR)	Pioneer	1.06	46.5, 46.6
Gibson	15.00	Hyola 502RR, Hyola 601RR	Pacific	1.95	44.1
Kendenup	51.66	46Y20(RR)	Pioneer	1.72	45.2, 46.1
South Stirling	64.45	46Y20(RR)	Pioneer	2.00	47.6, 47.5, 45.8
Mobrup	53.50	Hyola 502RR, Hyola 601RR	Pacific	1.98	45.2, 44.4
Wamenusking	47.72	Hyola 502RR	Pacific	0.83	41.8
Takalarup	57.21	46Y20(RR)	Pioneer	1.82	46.4, 46.2
Takalarup	70.00	46Y20(RR)	Pioneer	1.81	47.1, 47.0, 46.3
Woogenilup	57.85	GT61	Nuseed	1.20	43.5
Balkuling	50.74	GT61	Nuseed	1.23	44.0, 44.1
Gilgering	58.45	Hyola 502RR	Pacific	1.64	41.3, 46.5

[a] Areas planted were calculated using GPS coordinates provided by Monsanto
[b] Yields were calculated using CBH weighbridge statements against grower reports of areas harvested
[c] If a grower delivered more than one load of GM canola, oil content of each load is shown, with individual values reported for composite truck and trailer loads

In accordance with its role as an independent monitor and auditor of the trials, the department's authorised officers verified complete harvest of all trial sites, supervised the clean-down of harvesting equipment and verified that all GM grain was either delivered to CBH or disposed of under protocols approved by the Office of the Gene Technology Regulator (OGTR). The authorised officers investigated 11 minor incidents during the trials, each of which was effectively managed to maintain the segregation of GM canola from non-GM canola.

CBH used strip tests which can detect the CP4 EPSPS protein made in Roundup Ready plants to examine for the possible presence of Roundup Ready canola seed in all loads of non-GM canola delivered by the GM growers. All strip tests returned negative results. CBH also sampled and tested all stacks of non-GM canola delivered in WA in 2009, with all 1081 samples returning negative results.

All participating growers said they believed GM canola would have a future role in WA farming systems, providing an additional tool for weed management and as an alternative in-crop mode of action herbicide for herbicide resistance management.

The department's report on the 2009 GM canola trial program was provided to the Minister for Agriculture and Food, and is available from the GM crops webpage on the department's website www.agric.wa.gov.au/gmcrops.

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