

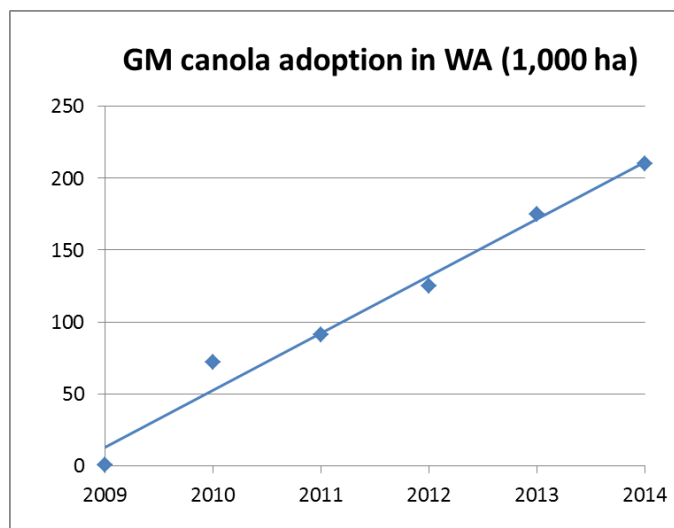
GM canola adoption in Western Australia – Feb 2014

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The adoption of GM canola has been enthusiastically embraced by farmers in Western Australia and at a record pace. In 2014 the adoption of GM canola stands at 210,000 hectares, or 22% of the WA canola crop. It began in 2009 with only 850 hectares and 17 farmers under the watchful eye of Terry Redman (then WA Ag Minister). It is now estimated that about 1,000 farmers will grow it.

This figure may surprise some eastern states onlookers. But most agronomists believe that adoption will keep on increasing, as better varieties continue to come on board. At the same time farmers have swung over hybrid varieties. Our farmers have access to triazine tolerant (TT), imidazolinone tolerant (IT), non-herbicide tolerant (NT) and glyphosate tolerant (RR) canola.

Farmers are also increasingly adopting hybrid seed genetics due to a 15% yield increase (see <http://www.nvtonline.com.au/nvt-results-reports/>) over open pollinated varieties. Even in drought



years these hybrid varieties increase yields by 150 kg/ha. This increase mostly pays for the extra cost of the hybrid seeds. In WA, the RR hybrids typically show, a 5% yield increase over IT hybrids, and a 10-15% yield increase over TT hybrids. The seed cost of hybrids, no matter which type, is currently \$26/kg. With the RR varieties there is a \$7.20/kg royalty payment for the RR technical user fee.

Western Australia has not had a good experience with IT canola. This is due to the mostly acidic nature of our soils which gives a risky level of residual herbicide carryover. WA farmers also over-relied on group B chemistry in the 1980-90's and now both radish and ryegrass are resistant to it. So WA has had a strong over-reliance on atrazine tolerant canola with inherent-mitochondrial driven yield penalties. When breeding GM canola was abandoned in 2003 two adverse impacts resulted. Glufosinate ammonia tolerant canola (LL) was abandoned by Bayer (it was going to be released in 2003) and RR lines were not advanced. This meant that the TT canola varieties played catch up. In 2009 breeding recommenced on RR lines which now do consistently out yield both IT and TT lines.

GM canola helps us to manage weeds and herbicide resistant weeds easier and with greater herbicide diversity. It has also reduced our resistance challenges, similar to the 17 year GM canola Canadian experience (now 97% GM and over 85% are hybrids).

The alternative management to GM canola would involve a greater reliance on burning of crop residues and increased tillage, which our farmers are not keen to do. By burning residues and cultivating, farmers would be pouring carbon dioxide into the air through rapid oxidation of organic matter and increased burning of fossil fuels. We would then lose our mulch over the soil which reduces water evaporation and eliminates soil erosion.

GM canola helps us to conserve more water in our dry farming systems in conjunction with no-tillage; where we are world leaders, at 95% adoption. These two tools allow us to plant our crops dry, conserve summer rainfalls and survive droughts that have been common in the last 14 years. There is a \$10-40/t price discount for GM canola however, the extra oil content with the GMs compensates for this slightly lower price per tonne. Indeed, the advantages of growing GM canola are significant to farmers otherwise the adoption would not have flourished as it has.