$170 million annual loss for rejecting GE canola for WA!

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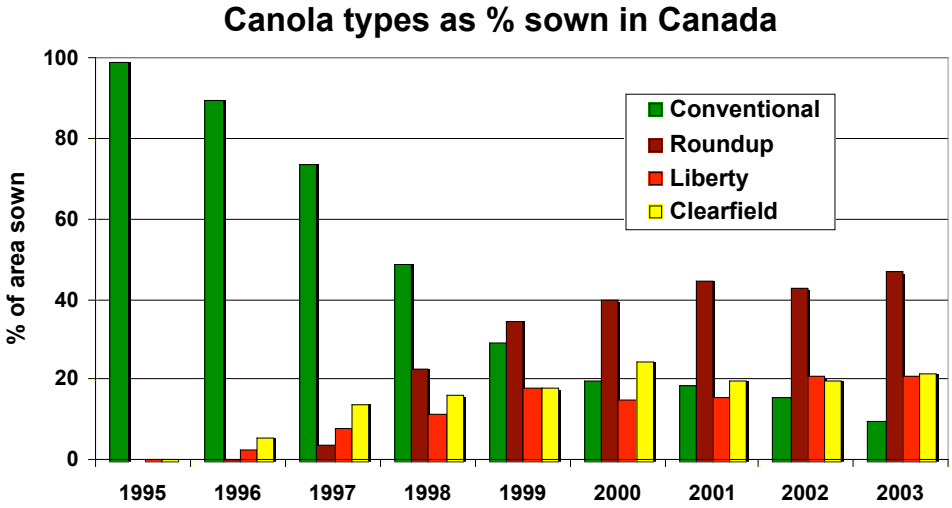
Canadian GE canola adoption

Why has the innovative WA state been so easily bluffed into believing that Canadian farmers are fools for wholeheartedly embracing genetically engineered (GE or GM) canola? And it seems other Australian states have followed our lead of rejecting GE technology. Our fellow Canadian farmers have embraced GE canola (and GE corn and soybean) more quickly than any other agricultural technology ever released - even more quickly than no-tillage! See the graph below from the Canadian Canola Council.



It is highly likely that Canadians will soon completely abandon conventionally bred canola. This is not because they can not obtain GE-free seed of conventional varieties (see www.gov.mb.ca/agriculture/crops) which they now plan to grow in Canada's Maritime states. Canadians have over 30 conventional varieties. So why are they abandoning conventional canola? Note that Canadian's abandoned TT canola ~12 years ago.

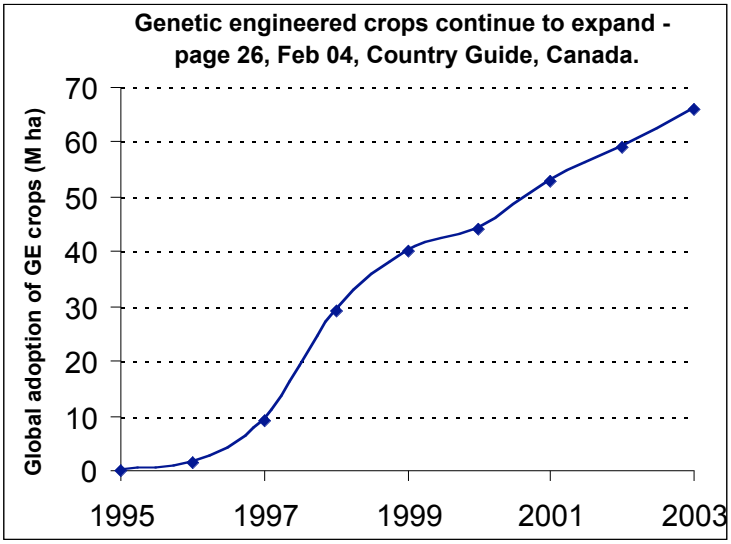
My close contacts with Canadian farmers and agronomists, over eight years, leads me to conclude that there are six main reasons why Canadians have wholeheartedly embraced GE canola. They are:

1. Superior weed control,
2. Herbicide resistant weed management,
3. Potentially better yield,
4. Earlier time of sowing with more return and more profit,
5. Less costs and
6. Ease of management.

Most markets accept GE canola

I am amazed that the media keep giving mileage to those presenting the myth that world markets do not accept GE canola. This is not true for more than 90% of our current markets! If someone says something long-enough and loud-enough does this make it true! Why are our WA canola prices the same as the Canadian Winnipeg canola prices, as read out on the rural ABC radio every morning?

Canadian farmers have no problems selling their 7 mt of mostly GE canola. They export to the same markets as we do, with our 1.2 mt of canola. These include; Japan, Pakistan, China, Korea, Mexico and USA. There is one small market exception - the European market. However, a few weeks ago they gave the final political approval to Syngenta's BT 11 sweet corn for human consumption. GE canola is expected to follow suit later this year. For the last eight years Canada has just sold into other GE accepting markets and without a penalty. Every year more countries are growing GE crops.



Why has our canola price been the same as theirs all this time if there was a premium to be had? Have we wasted 8 years of non-GE market opportunity or have we wasted 8 years of GE agronomic opportunities? Let the buyers put this premium on the table as it will have to be substantial to overcome the opportunity cost that GE is waiting to give us! Besides, we know there is no trace of the GE gene remaining in canola oil.

Why would Australian politicians reject GE canola when it has been the bread-winning crop for most Canadian prairie farmers since 1998? I believe it is from fear and mis-information fed to the average voter that the politicians are following. The hysteria being whipped up by anti-GE people is from a motive that I can not comprehend. I can comprehend Greenpeace's stance - they need an issue to keep themselves in the spot-light and keep their funding happening.

Dr Patrick Moore

An apt quote from Patrick Moore, co-founding Member and Former **President of Greenpeace** who recently said *"I believe the campaign of fear now waged against genetic modification is largely based on fantasy… and a complete lack of respect for Science and Logic"* and *"In the balance it is clear the real benefits of genetic modification far out weigh the hypothetical and sometimes contrived risks claimed by its detractors."* (see http://www.brucegoldfarb.com/moore.htm)

Genetically engineered canola trial data

I estimate that there are $170 million benefits annually available to WA for adopting GE canola. To calculate this we need to make some assumptions. Some of these assumptions are based on the conservative, yet comprehensive, 36-page review of potential of GE canola for Australia by Melbourne University's Dr Rob Norton (see within www.avcare.org.au). Feel free to make your own assumptions by using my spreadsheet which can be found at www.no-till.com.au.

The most important economic drivers determining the costs and benefits of GE canola are grain yield, weed control and residual weed control. Trials conducted in Western Australia in 2003, as published in the 2003 Crop Updates (conducted by independent researcher, Mike Lamond) show GE canola consistently yielded 200 kg/ha more than the current TT canola varieties. This is a conservative result, partly because GE trial restrictions have meant they were not able to be sown until June, partly because old GE genetics were used and partly because the land chosen had low weed burdens.

The full yield potential of local GE material has not yet been realized in WA. In our recent drought years of 2000, 2001 and 2002, independent trial results (by Mike Lamond) showed that our current TT

This is a massive 600 kg/ha increase in yield - in drought years, an outstanding result that begs a hearing by farmers and politicians!

The exciting news is that we could convert these conventional varieties into GE varieties quite quickly, like the Canadians did 10 years ago. This transformation can be as rapid as 12 months. Hence, if there was a commercial incentive to convert these conventional varieties into herbicide tolerant varieties (GE), then canola could become a very profitable crop for all WA farmers, and not just in the wetter or southern areas of the state. Canola could then become as an important crop to us as it is for the Canadians and this could dramatically reduce our current over-reliance on our wheat crop.

Problems of TT canola

There are two major problems we have with TT canola varieties. Firstly; TT canolas are physiologically inefficient converters of sunlight energy to sugar, which greatly restricts their grain yield potential and secondly; any new TT lines, that are adapted to WA conditions, take a long time to breed. In contrast, there are many new and good conventional canola lines adapted to WA with high grain yields. However, due to a lack of broadleaf herbicides available in canola, we can't afford to grow these in most regions of WA.

Economic assumptions

Now, back to the $170 million assumptions. This figure is based on four main effects, and are listed in the Table I as 1. Canola issues at $40,608,800, 2. Wheat issues at $25,200,000, 3. More canola grown at $81,000,000 and 4. More wheat from new canola crop at $24,300,000. The calculations can hopefully be followed in Table 1. I will use letters, as seen down the left hand column to try to make it clear. The figure assumes:

(a) Canola is worth $380/t - last 5 years average,

(b) 200 kg/ha grain yield increase is applied to GE canola,

(c) A full adoption of GE canola on 460,000 ha (WA's 5-year average canola cropped area),

(d) GE canola is $10/ha cheaper to grow with less herbicide use and greater seed cost,

(e) A 2% higher grain oil level over TT canola, worth a 3% price premium

(f) Noodle wheat is $A180/t

(g) 200 kg/ha more wheat is grown after canola than after wheat

(h) There are 4.5 million hectares of wheat grown each year in WA

(i) 10% of wheat is grown after clean GE canola

(j) The wheat grown after GE canola needs $20/ha less herbicide cost

(k) As in Canada, grassy paddocks are sown to canola, worth $120/ha more

(l) GE canola is adopted rather than green manuring, dirty pastures or lupins in dry regions

(m) No figure used, but would greatly reduce stubble burning and sheep induced erosion

(n) The wheat following crop yield 300 kg/ha more than when grown after a grassy pasture

These figures can be changed at will. But should be changed based on real trial data, apples must be compared with apples - no fairy dust please! This brief economic analysis shows potentially how large the gains could be for WA farmers. To farmers in coastal areas who can easily grow good TT yields and barley please be considerate of the huge benefits this GE technology would afford more northern farmers whose crop diversity options are minimal.

Table 1: Financial analysis table of GE canola for Western Australia in 2004

1. Canola issues		
a	$ 380	value ($/t) of grain delivered
b	0.200	extra grain yield from GE canola (independent 2003 trials)
c	460,000	ha grown in 2003
	92,000	extra tonnes grown from GE lines
	$ 34,960,000	extra $ generated from GE lines
d	$ 4,600,000	saved $10/ha = $35/ha for less herbicides - $25/ha for GE seed
e	$ 1,048,800	3% more grain value from 2% more oil

2. Wheat issues (this assumes wheat and GE canola are equally profitable)

f	180	value ($/t) of grain delivered
g	0.2	extra yield from growing wheat after canola rather than wheat
h	4,500,000	ha grown annually
i	10%	% of wheat that might be grown after clean canola
	90,000	extra tonnes of wheat grown
	$ 16,200,000	extra $ generated
j	$ 20	per hectare less herbicide required for 15% of wheat
	$ 9,000,000	less herbicide costs from sowing into clean GE stubble
	$ 25,200,000	Extra wheat income from GE canola

3. More canola grown on dirty pastures and 4. better subsequent wheat crop

k	$ 120	$ difference between grassy pasture that is cleaned vs GE canola
l	**$ 81,000,000**	Canola grown on 'clean-up' paddocks (another 15% of land)
m	$x	Less wind erosion on sprayed pastures + more moisture trapped
n	0.3	t/ha more wheat after clean canola rather than grassy pasture
	$ 24,300,000	Extra wheat from more GE canola stubble
	$171,108,800	Extra potential income from GE canola package

It is also not ridiculous to consider a 600 kg/ha GE canola yield increase in drought years in dry regions of WA. This has been proven by data generated by Mike Lamond in WA in our recent droughts. GE transformation of some excellent short season varieties can easily be done if it were politically encouraged. Then we could change assumption (b) to 600 kg/ha and assumption (k) to $360 and this would lift the benefits of GE canola to a massive $405 million a year. This is excluding the potential wheat yield penalty that can occur when grown after lupins in droughts, in low rainfall regions.

Dry wheatbelt desperately needs diversity

Farmers in very low rainfall areas are nervous about planting wheat into a thick legume paddock if it has grown lots of legume bulk. This is because they have produced lots of readily available organic nitrogen (N) that will promote rapid early crop growth. This rapid early growth can cause the wheat crop to grow too fast and dry the soil. Consequently the wheat crop can 'hay-off' if the coming year turns dry. Dry winters are hard to predict at sowing time. GE canola would not create this 'excess N' potential risk and farmers can then regulate the N supply to the crop with post sowing N applications.

GE canola would increase canola production in WA. There is a desperate need for wheatbelt farmers to have greater crop diversity for weed, disease and insect management and for market risk and time management. The adoption of GE canola would enable less herbicide use, better herbicide resistant weed management, less stubble burning, greater crop diversity and it would be as profitable as wheat growing.

Dry wheatbelt farmers know that sheep struggle to be managed sustainably in drought years. While with GE canola, with a proposed end point royalty scheme, makes GE canola a low risk option, while maintaining clean paddocks. If no GE grain is grown and delivered then no technology fee is paid. We know that in dry areas, time of sowing is everything for canola, and marginal soil moisture at seeding makes this decision challenging as TT weed control will be compromised without good following rains. GE canola eliminates this problem.

Some real GE concerns

The Canadian experience has taught us that it is a challenge to keep different canola lines pure. This has meant that the organic canola growers were unable to remain 100% GE free. The Canadians have not tried to segregate their canola and they found a 0.25% level of contamination was common in their studies. However, the Canadian farmers, after 8 years experience, are not nervous about this and believe that if they wanted to revert to growing non-GE canola, they could, within a few years. GE canolas are easily killed by many herbicides from Groups B,C,I,F&L.

The technology use agreement (TUA) has been the most uncomfortable part of Roundup Ready (RR) canola. However, hybrids are now available in RR canola, as they have been with Liberty Link canola for a long time and hybrids effectively eliminate the need for a TUA as the seed has to be purchased every year. The feared terminator gene could also eliminate the need for a TUA and it would minimise any risk of contamination. But this idea was not understood and it was taken off Monsanto's agenda several years ago.

Another concern over GE canola is that many multinational companies will lose their large herbicide markets. Consequently, farmers will be applying less herbicides to their crops and this may reduce R&D by these companies. A typical TT canola requires about 2.8 kg/ha of herbicides, mostly Atrazine, while a GE canola crop might require 1.2 kg/ha of herbicide.

Who is liable for the opportunity cost of the $170 million?

The question now should be asked - who is going to pay rural WA the missed opportunity cost of $170,000,000 for not allowing WA farmers the opportunity to grow GE canola in 2004? There is much prosperity with this opportunity for farmers statewide. I am convinced that with more time people will realise what a wonderful opportunity we are forfeiting and what weak and unsubstantiated arguments people have been led to believe. Perhaps this will become a state government election issue?