

The Step-wise Approach to Adoption of Genetically Modified (GM) Canola in Western Australia

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This article presents a review and analysis of the process of commercial adoption of genetically modified (GM) canola in Western Australia with the aim of providing information to aid in the planning for the adoption of GM crops in the future.

Adoption of GM canola proceeded in two steps. In 2009, there were limited-size commercial trials, and in 2010 there was unrestricted commercial cultivation of GM canola. The Department of Agriculture and Food Western Australia had the role of an independent monitor and auditor of these GM plantings.

There was effective segregation of non-GM canola from GM canola in 2009 and 2010. There was a coexistence-related event where an organic grower lost certification of a portion of his property due to the presence of GM plant material. This case highlights the need for realistic thresholds in biological systems to enable coexistence of different production systems.

Key words: coexistence, genetically modified canola, organic, standards, genetically modified organism legislation, thresholds, accidental presence.

Introduction

Global planting of genetically modified (GM) crops has steadily increased since the first large-scale commercial planting of 1.7 million hectares in Argentina, the United States, Mexico, Canada, China, and Australia in 1996. In 2010, 148 million hectares were sown to GM crops in 23 countries (James, 2010).

Australia has been cautious in its approval of GM canola. While the Australian Office of the Gene Technology Regulator (OGTR) issued licenses for the commercial release of Roundup Ready[®] and InVigor[®] canola varieties in 2003, they were not planted commercially until 2008. This slow rate of adoption was mainly due to the major canola-growing states (Western Australia, Victoria, New South Wales, and South Australia) placing moratoria on commercial cultivation of GM canola while they considered its potential impact on markets and trade. This article first outlines the Australian legislation for genetically modified organisms (GMOs) and the Western Australian (WA) canola industry before describing the cautious step-wise approach taken to the adoption of GM canola in WA. The article closes with key lessons derived from this approach.

Australian GMO Legislation

The Australian *Gene Technology Act 2000* started in 2001. This Act is supported by the Australian Gene Technology Regulations 2001. Under the *Gene Technology Act 2000*, the OGTR has oversight of all dealings

with GMOs in Australia. The OGTR is required to assess the possible effects of any proposed GM dealing on human health and safety and the environment and only permits dealings with GMOs if any risk of harm can be managed.

All Australian states and territories have signed the intergovernmental Gene Technology Agreement 2001 (the Agreement). The major outcomes of this agreement are: (1) the Gene Technology Ministerial Council (GTMC) has oversight of the Australian GMO regulatory system, and (2) all states and territories have committed to have corresponding GMO legislation to the Commonwealth. In WA, the corresponding legislation is the *Gene Technology Act 2006* and the Gene Technology Regulations 2007.

The Australian *Gene Technology Act 2000* was independently reviewed in 2005/2006. As an outcome of the review, there were minor changes to the margins of the Act to improve its operation and effectiveness and reduce regulatory burden. The Australian *Gene Technology Act 2000* was again independently reviewed in 2010. The outcome of the 2010 review is not yet publicly available.

As noted in the introduction, although the OGTR permitted commercial cultivation of GM canola in 2003, the first commercial plantings were delayed until 2008. This delay was largely because some members of the grains industry, including grain marketers, were concerned about the potential impact of the introduction of

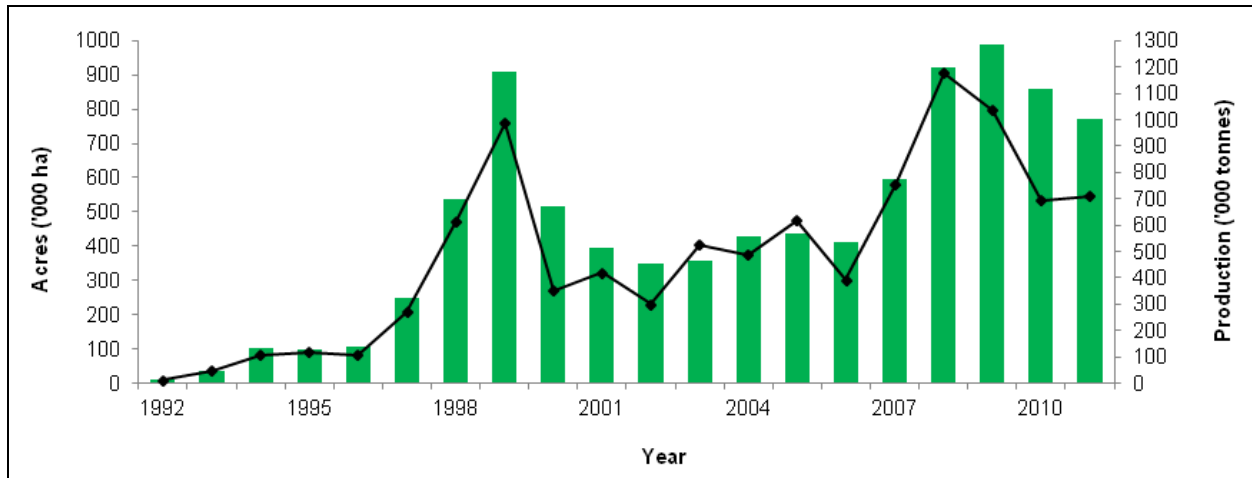


Figure 1. The area sown to canola ('000 ha) and production of canola ('000 tonnes) in Western Australia from 1992 to 2011. Data for 2011 are estimates.

Data derived from the Australian Bureau of Agricultural and Resource Economics and Sciences and the Grains Industry Association of Western Australia.

GM canola on Australia's wheat markets. This concern, once voiced by grain marketers, also flowed down to grassroots growers and producer organizations. In response to this concern, state governments in canola-growing areas placed bans on the commercial cultivation of GM canola on the basis of market and trade concerns. These bans were later reinforced when the GTMC issued a policy principle, recognized under the *Gene Technology Act 2000*, which enabled states and territories to implement legislation to prohibit the commercial cultivation of GM crops where possible risk of harm to the state or territory's markets could be demonstrated.

In WA, the *Genetically Modified Crops Free Areas Act 2003* (GMCFAA; Australian Minister for Agriculture and Food, 2003) was passed late in 2003. The GMCFAA 2003 seeks to preserve the identity of non-GM crops by designating the whole of the state as an area in which GM crops must not be cultivated, with provision for all or any part of the state to be exempted under specified circumstances.

The Western Australian Canola Industry

The area sown to canola in Western Australia has risen steadily since the early 1990s. The area sown has peaked to between 800,000 and 1 million hectares, yielding between 700,000 and 1,200,000 tonnes (Figure 1). Since 2003, canola has accounted for, on average, around 8% of the area sown to grain crops per year. This means canola is the third-most planted grain crop in WA. Between 2003 and 2011, wheat has accounted for

55% (on average), and barley accounted for 15% of the total area planted per year to grain crops.

Since 2002, WA has produced the largest amount of canola per year of the Australian states (Figure 2). The major export destinations of WA's canola over the past five years were Japan, the Netherlands, and Pakistan (Table 1).

Grains Industry Organizations and Grain Trading Standards

In Australia, Grain Trade Australia (formerly the National Agricultural Commodities Marketing Association) is the peak Australian grain-handling industry body. Grain Trade Australia (GTA) has more than 300 member organizations involved in the Australian grains industry and was formed to standardize grain standards and trade rules. These organizations handle more than 95% of the Australian grain crop, and more than 90% of Australian grain contracts are based on GTA trade rules. The Australian Oilseeds Federation (AOF) was established in 1970 and is the main industry organization for canola and other oilseeds. The AOF includes members from all sectors of the oilseed industry—from technology development to end-users.

Between 2003 and 2007, the Australian canola industry worked to develop and adopt protocols and processes to effectively segregate non-GM canola from GM canola. As outlined in the 'Delivering Market Choice with GM Canola' report, the Australian canola industry has adopted a position of market choice for

Table 1. A summary of the major export destinations of Western Australian canola.

Country	Year					5-year average
	2006/2007	2007/2008	2008/2009	2009/2010	2010/2011	
Japan	80.6	18.5	11.1	23.1	7.3	28.1
Netherlands	0.0	21.0	45.4	0.0	69.3	27.2
Pakistan	11.6	34.4	12.3	52.1	0.0	22.1
Belgium	0.0	0.1	6.4	15.4	8.8	6.1
Germany	0.0	13.0	4.8	0.0	9.3	5.4
Bangladesh	6.5	0.7	0.4	8.2	1.0	3.4
United Arab Emirates	0.0	11.7	0.0	0.5	3.5	3.2
France	0.0	0.0	15.5	0.0	0.0	3.1

Values are % of the total value of Western Australian exported canola. Data derived from the Australian Bureau of Agricultural and Resource Economics and Sciences.

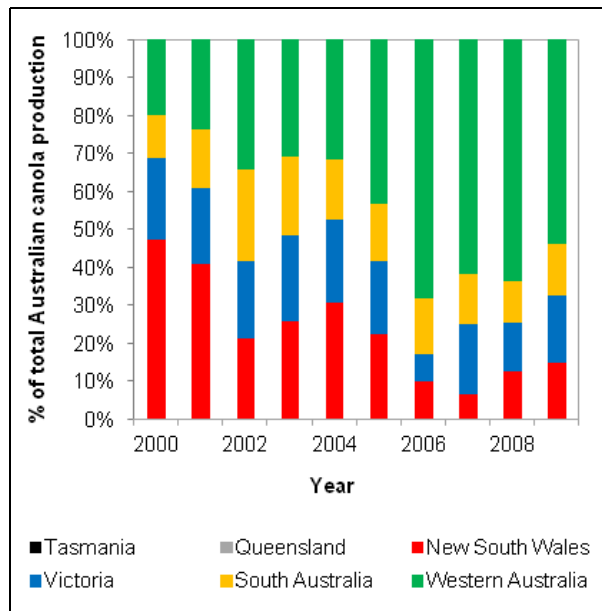


Figure 2. Canola production per State of Australia from 2000 to 2009.

Data from the Australian Bureau of Agricultural and Resource Economics and Sciences.

anola (AOF, 2007). By 2007, the canola industry had developed protocols and processes to ensure the delivery of canola grain to meet customer specifications and adopted a marketing threshold of 0.9% accidental presence of approved GM canola in non-GM canola. At the same time, Australia’s major markets for canola had also adopted marketing thresholds for GM presence in non-GM canola and approved the import of GM canola.

Organic canola is not generally grown in Australia because it requires a high level of management by the producer to ensure adequate soil fertility and weed and

pest control (Victorian Department of Primary Industries, 2006). However, Australian growers do produce other organic grains. The Australian Organic Market Report 2010 (Mitchell, Kristiansen, Bez, & Monk, 2010) noted that the value of the sales of organic grains in 2009 was estimated at \$9,456,000, and the value of organic grain production was 0.13% of Australian gross value of all grains.

The Australian Organic Federation is the peak body for the organic industry in Australia and aims to work with all sectors of the Australian Organic Industry to develop and expand the industry to benefit consumers, producers, and the Australian environment. In practice, Australian organic or biodynamic growers are certified by one of seven independent organic certifying bodies (Munro, 2010). Each of the seven organic certifiers has their own standard, and the Australian Quarantine and Inspection Service (AQIS) audits and accredits all seven of the organic certifying bodies. AQIS accreditation means that the seven organic-certifying bodies can certify that a product is biodynamic or organic and issue organic export certificates on behalf of the government. AQIS ensures that the certifiers comply with the National Standard for Organic and Bio-Dynamic Produce and related administrative requirements that stipulate the minimum requirements for organic and biodynamic products placed on the export market (AQIS, 2009). The same organic certification system is used (by default) for the domestic Australian market; however, unlike exports, where a product must be certified, there is no mandatory government requirement that organic product must be certified if labelled organic for sale on the domestic market. However, in practice, all reputable retailers require certification as assurance that an organic product is authentic.

On October 9, 2009, Standards Australia (2009) announced the release of a new Australian Standard. The Standard AS 6000-2009 Organic and Biodynamic Products is based on the 1992 Standard and is intended to become the minimum standard for both domestic and export trade. However, at present the transitional arrangements towards adoption of the new Standard by AQIS and the organic industry are yet to be determined.

Both the 1992 National Standard and 2009 Australia Standard prohibit the use of GMOs or their derivatives. The 1992 Standard states that “the certification of organic crops, livestock, or agricultural products will be withdrawn where genetically modified crops, livestock, or agricultural products are grown or produced on the same farm.” In contrast, the 2009 Standard replaces this statement with: “The labelling of organic and biodynamic crops, livestock, or agricultural products shall not be permitted where gene technology is used to grow or produce crops, livestock, or agricultural products on the same farm.” Neither Standard mentions any threshold for accidental presence of GM material on organic properties or in organic products.

Adoption of GM Canola in Western Australia

By 2009, several events provided the impetus for a review of the status of GM canola in WA. In 2007, the Australian grains industry had concluded in the ‘Delivering Market Choice with GM Canola’ report that the industry was ready to manage GM and non-GM canola within the supply chain to deliver grain to meet customer specifications. Also in 2007, New South Wales (NSW), Victoria (VIC), and South Australia (SA) reviewed their moratoriums on commercial cultivation of GM canola. The review panels of all three states recommended an end to the moratoriums.

The NSW and VIC Governments subsequently decided to end their respective moratoria on commercial cultivation—leading to the first Australian commercial plantings of GM canola in both states in 2008. A total of 108 growers planted 9,600 hectares of Roundup Ready varieties and produced 9,336 tonnes of grain. The harvested grain was crushed and the oil sold into the domestic market by late 2009 (AOF & GTA, 2009). As documented in a Grains Research and Development Corporation (2009) report, “generally growers who have tried the new technology have been happy with the weed control and the additional tool it provides in fighting herbicide-resistant weeds.” A joint AOF/GTA industry report on management procedures used in the

2008 crops found that the grain industry had achieved all the steps required to ensure market choice, concluding that there was no need for any revision of the adopted market-choice protocols. Although difficult climatic conditions produced relatively low yields in 2008, the area sown to GM canola in VIC and NSW increased to about 40,000 hectares in 2009 (AOF & GTA, 2011).

By 2009, the two main Western Australian grower organizations had adopted policies that supported the adoption of GM canola. This change was indicative of an overall change in opinion about GM crops by Australian growers. The Kondinin Group is a national Australian grower group that surveyed grower opinion towards GM crops in 2002, 2004, 2006, 2007, and 2009. In 2002, 45% of growers did not support GM crops, 36% were unsure, and 19% supported GM crops. By 2009, 24% of growers did not support GM crops, 25% were unsure, and 51% supported GM crops (Griffiths, 2010).

The 2009 Limited-size Commercial Trials

In January 2009, the Western Australian Minister for Agriculture and Food issued an exemption order to permit limited commercial-size trials of GM canola. The aim of the trials was to assess whether the WA grains industry could segregate non-GM canola from GM canola. A secondary aim was to assess the agronomic performance of GM canola in WA. Conditions of the exemption order included that (1) each trial planting must be approved by the Chief Executive Officer of the Department of Agriculture and Food (DAFWA), (2) the area of each trial planting must be less than 70 hectares, and (3) the total area of all plantings must be less than 1,000 hectares.

Growers who wished to participate in the trials were required to meet all of DAFWA’s requirements, namely that they had:

- notified their neighbors of their intention to plant GM canola;
- completed or were in the process of completing the CBH Group’s *Better Farms IQ*¹ quality-assurance program;
- accepted responsibility for any costs incurred, or income forgone, by themselves as a consequence of the trial—and for the on-going monitoring of the site and surrounding areas and any associated remedial action; and

1. *An on-farm quality-assurance program built to meet SQF 1000 and HACCP compliance requirements*

- agreed to provide access to DAFWA officers to inspect the trial site and other areas, equipment, facilities, or documents related to the trial.

These requirements were in addition to those set out in the Monsanto agreements, which included that growers:

- follow the Monsanto Crop Management Plan and Resistance Management Plan;
- maintain a Crop Management Plan checklist and Resistance Management Plan to demonstrate compliance with the plans;
- only deliver GM grain to CBH Group (an Australian cooperative) and declare it as having been produced from Roundup Ready seed upon delivery;
- not save seed for use in plantings in future years; and
- allow Monsanto or nominated auditors to verify that the technology is being used in compliance with the agreements.

At the end of the selection process for growers, the Minister for Agriculture and Food announced the location of each of the 20 trial properties in April 2009. There were 18 commercial farms and two DAFWA research sites. Most properties had a combination of a commercial planting (7-70 hectares) and one or more small-scale plantings (2,250-4,040 square meters). Overall, there were 860 hectares planted to GM canola and a total of 33 small-scale plantings. The small-scale plantings were undertaken by either seed companies, research service providers, or research organizations to produce regulatory data, demonstrate the technology, or examine the performance of different canola production systems.

DAFWA had the role of an independent monitor and auditor of the 2009 GM canola trial program. DAFWA established a team of trial officers with extensive experience in in-field crop research, laboratory, and supply-chain audit techniques. The officers visited each trial site at least three times prior to, during, and after the growing season. The DAFWA officers also made several inspection visits to CBH Group grain-handling facilities before delivery of the harvested GM grain and during handling of the GM grain. Reports on all of these inspection activities were collated by the auditing coordinator and used to prepare DAFWA's report on the 2009 GM canola trials.

During the pre-seeding inspection and audit, the DAFWA officers outlined their role in the program to the grower, inspected the storage of the GM seed, and

guided growers in preparing their seeding equipment and the necessary record-keeping arrangements. The flowering audit and inspection focused on checking that the growers were recording the required seeding and crop-management information and visually inspecting the area surrounding the crop for GM volunteers. Any possible volunteers were checked for the presence of Roundup Ready material using strip tests.

The main aim of the harvesting inspection was to supervise the clean-down of harvesting equipment. The officers also provided advice on the proper use of identifying tags and sealant tape for trucks delivering grain to the CBH Group receival points. After the GM grain was delivered to the CBH Group receival points, the officers took copies of all weighbridge statements from growers to enable a reconciliation of the harvested grain and verified that all GM grain was either delivered to the CBH Group or—in the case of most of the small-scale trial sites—destroyed.

During the trials, DAFWA officers identified, investigated, and reported on 11 incidents. Each incident was managed to ensure it did not impede the effective segregation of GM and non-GM canola. Management practices included hand removal or herbicide destruction of GM canola plants and the harvesting and delivery of non-GM canola growing within five meters of a GM crop as if it were a GM type. The different types of incidents are summarized below.

- One incident occurred where GM seed was delivered to a research service provider without the required notification to Quarantine Western Australia.
- Two incidents were seed spills. One spill led to the germination of GM canola in a triazine-tolerant crop; the GM plants were destroyed with triazine. The second spill site was sprayed with herbicide and subsequent inspections found no GM canola plants.
- Two incidents consisted of small-scale GM trials being planted less than five meters from an adjacent non-GM canola crop. The non-GM canola within five meters of the GM plants was harvested and delivered as GM canola.
- One incident had GM plants germinating and growing in an adjacent cereal crop. Windy conditions at seeding apparently led to having seed blown from the seeder into an adjacent crop. The GM plants were removed by hand and an inspection two weeks later confirmed all GM plants were removed.
- One incident related to the sowing of small-scale trials. Mechanical failure of a small-scale plot-seeder led to the sowing of incorrect amounts of GM seed

in the small-scale trial. The trial site was abandoned and a small number of GM canola plants subsequently germinated on the original site within a wheat crop. The GM canola was removed by hand and the wheat crop sprayed with a selective broad-leaf herbicide registered for use in wheat. An inspection two weeks after spraying confirmed no GM canola plants were present.

- One incident was found where the delivery of commercial-scale GM grain was delayed because of concerns the GM grain would not meet CBH Group receival standards for weed seed levels. The grain was delivered after testing confirmed it was within limits.
- One incident presented when six small bags of GM canola grain were left near a small-scale trial. Investigation revealed the small-scale trial manager had arranged with the grower for the bags to be added to GM grain being delivered to CBH Group. The GM grain was subsequently delivered to CBH Group.
- One incident was where strong winds blew swathed GM canola onto and over a boundary fence. The swathed material was removed, the neighbor informed, and a monitoring program established to manage any GM plants found.
- One incident involved the need for clean-down of a second swather due to breakdown of the first swather.
- One incident occurred when a load of GM canola was delivered to a CBH Group receival site without notifying CBH Group of the impending delivery. CBH Group advised that its standard receival practices include processes to manage any deliveries made without prior notification, and the incident did not pose a threat to effective segregation of GM and non-GM canola.

At the end of the 2009 GM canola trials, DAFWA prepared a report for the Minister for Agriculture and Food. The major finding from the report was that the 2009 trials program demonstrated both the industry's ability to maintain segregation of GM and non-GM canola throughout the supply chain and the agronomic viability of the Roundup Ready GM technology under Western Australian conditions. Overall, growers reported that it was worthwhile to adopt the additional protocols and practices to ensure effective segregation to enable access to the technology.

The 2010 Commercial Plantings of GM Canola

In 2010, the Minister for Agriculture and Food issued an exemption order to permit commercial planting of GM canola in WA. Following this, 317 growers chose to plant around 72,000 hectares of Roundup Ready GM canola. The area sown to GM canola was roughly 8% of the total area sown to canola in WA in 2010. Due to below-average rainfall, yield of all grain crops were less than average for the state. The GM canola plantings produced around 49,000 tonnes of GM canola. At the end of harvest, CBH Group stated there was effective segregation of non-GM canola from GM canola in 2010. The export data in Table 1 demonstrates that Western Australian non-GM canola was sold to the GM-sensitive European Union in 2010 at grains-industry reported premiums of up to \$50/tonne.

DAFWA had a major role in the first year of commercial planting of GM canola in WA. DAFWA ran an audit program of GM growers and also provided guidance and information to growers and local government authorities. The guidance to growers included information on growing GM and non-GM canola varieties and also guidance on best practices to ensure effective on-farm segregation of non-GM canola from GM canola (Farmnotes No. 406-409; DAFWA 2010a, 2010c, 2010d, 2010b). DAFWA also provided local government authorities with specific information on the control of GM canola volunteers on roadsides.

DAFWA used two different means of communication to try to ensure growers from all production systems were informed of the GM canola plantings. DAFWA wrote to organic and biodynamic growers and facilitated the Minister for Agriculture and Food writing to all canola growers. The aim of these letters was to recommend that growers discuss their planned production activities with their neighbors. DAFWA published data on the number of GM canola growers and the area of GM canola plantings in each local government area on the DAFWA web site. DAFWA also continued to provide growers with the online 'Find Your Farm' service. This online service enables growers to find the location of different production systems within the agricultural regions of WA.

The aim of DAFWA's 2010 audit program was to assess the compliance of growers with the conditions of the Roundup Ready License and Stewardship Agreement. As outlined in the Monsanto Australia Roundup Ready Canola Technical Manual (2009) the conditions of the Roundup Ready License and Stewardship Agree-

ment are designed to ensure grower compliance with Australian regulatory requirements, the sustainability of use of glyphosate as a herbicide, and maintain product integrity within the Roundup Ready canola crop and the adjacent canola crops.

DAFWA designed the audit program to ensure one audit visit would assess compliance of growers with the Roundup Ready License and Stewardship Agreement over the entire growing season. As there were 317 GM canola growers, DAFWA's biometrician calculated there was a need for 53 audits to provide assurance of the compliance of the GM canola grower with the conditions of the Licence and Stewardship Agreement.

The audit visits were carried out between July 2010 and February 2011. The Minister for Agriculture and Food, DAFWA, and Monsanto encouraged growers to participate in the audit program to ensure that: (1) audits were carried out in a wide range of areas to ensure inclusion of a diversity of production systems, and (2) sufficient growers were audited to provide confidence in the results of the audits. Overall, more GM canola growers agreed to participate in the audits than were actually audited.

A total area of 24,158 hectares of GM canola was audited—or, roughly 33% of the area sown to GM canola in WA in 2010. There were no identified major or minor non-conformities with the requirements of the Roundup Ready License and Stewardship Agreement. There was one recommendation made by a DAFWA auditor: in this case, a grower had advised the auditor of their intention to save seed from a canola crop planted within 400 m of a GM crop. Following the recommendation from the DAFWA auditor, the grower decided not to save this seed for planting in 2011.

DAFWA's audit report was tabled in the Western Australian Legislative Assembly (Legislative Assembly of Western Australia, 2010). As an outcome of the audit program, DAFWA considered that the 2010 Western Australian GM canola growers had met the conditions of the Roundup Ready License and Stewardship Agreement. DAFWA also noted that in view of the importance of on-going compliance of growers with the conditions of the agreement, DAFWA recommended the Western Australian grains industry consider continuing the audit program using independent auditors currently available under existing audit programs.

In the 2010 season there was one case of a breakdown in coexistence of different production systems. In December 2010, Mr. Stephen Marsh contacted DAFWA to report the suspected presence of GM plant material on his National Association for Sustainable Agriculture,

Australia (NASAA) certified organic property at Kojonup. DAFWA staff visited his property on December 3rd, collected samples of plant material, and arranged for the independent testing of the samples for the Roundup Ready gene. The test results confirmed the plant material contained the Roundup Ready gene. DAFWA provided a report on their visit to Mr. Marsh's farm and has provided him with general technical advice to help him regain his certification as soon as possible.

NASAA decided to decertify the portions of Mr. Marsh's property where the GM material had been found. In the January 3, 2011, media release confirming NASAA's decision to decertify Mr. Marsh's property, the Chairman of NASAA (Ms. Jan Denham) stated:

“NASAA-certified organic produce has zero tolerance for GM content, which is in line with the requirements of the National Standard for Organic & Bio-Dynamic Produce and the Australian National Organic Standard AS6000. This is to ensure the integrity and quality of NASAA organic produce for businesses and consumers alike.” (NASAA, 2011)

Mr. Marsh stated that he would take legal action against his neighbor, Mr. Michael Baxter, to recoup his lost income due to the loss of his certification. On July 28, 2011, the law firm Slater and Gordon (2011b) issued a media release to announce they would lodge a writ in the WA Supreme Court on behalf of Mr. Marsh. According to the media release, the claim will allege that his neighbor, Mr. Baxter, was negligent in allowing GM canola to blow into the Marsh property before harvest, thus contaminating his land and causing the loss of organic status. As of September 30, 2011 the writ has not yet been lodged in the Supreme Court.

The Marsh case has led to further discussion of the role of thresholds in effective coexistence. The Australian organic standard for accidental presence of GM material in organic products is more stringent than the organic standards in Australia's main organic export markets. In 2007, in their report on the impact of adoption of GM canola on organic farming in Australia, Apted and Mazur (2007) commented that

“the stringency of the Australian standards potentially disadvantages Australian producers who may face the costs associated with the loss of organic status for their products and their farms, under circumstances in which their inter-

national competitors face no such cost. This potentially reduces the trade competitiveness of the Australian organic sector.” (p. 22)

More recently, Lederman (2011) commented that

“Given the various means of unintentional cross-pollination or mixture of GM and organic crops, such as in cases like the WA farmer, a zero-tolerance approach to GM presence in organic crops in Australia seems unsustainable.”

The 2010 Technical Review

At the end of the 2010 season, DAFWA organized a technical review of the first season of widespread GM canola planting. In January 2011, a broad range of grains-industry stakeholders including a certified biodynamic grower; a GM canola grower; and representatives from the Grains Industry Association of Western Australia, the Australian Oilseed Federation, the OGTR, Monsanto, and the Organic Federation of Australia met and developed a set of items for consideration for future management of the coexistence of GM, conventional (non-GM), and organic production systems. The main item of consideration coming from the meeting was that

“Growers from all three farming systems should conduct their risk assessments and implement risk mitigation strategies before planting. Communication between neighbors is the key to coexistence of different farming systems. Due to the uncontrolled forces of nature, it is not possible to completely eliminate the risk of accidental GM presence on neighboring properties and therefore communication between neighbors and relevant parties such as local government, contractors, and service utilities is essential.”

The 2011 Season

In 2011, 326 growers chose to plant 90,930 hectares of GM canola. As the Grains Industry Association of Western Australia (GIWA, 2011) estimated that 773,000 hectares was sown to canola in 2011, this represents 12% of the total area planted to canola.

As an outcome of the technical review and feedback from growers, DAFWA established the Sensitive Sites Western Australia service in May 2011. This online service was designed to help identify the location of sensitive agricultural production systems within the agricultural region of WA. One hundred and seventy-

five growers registered their property on the site. The registered properties were reported by their owners as being particularly sensitive to impact from some activities on nearby land, due to the nature of the production system or produce. In addition, DAFWA published Farmnote No. 468—‘Coexistence of different production systems’ (DAFWA, 2011)—to provide guidance to all growers on the requirements of the different production systems and to urge growers to discuss production system requirements with their neighbors.

The Albany Highway Spill of GM Canola

Since 2010, there has been one GM canola-related incident which gained media attention. On August 9, 2011, a truck spilled around 15 tonnes of GM canola on Albany Highway. The spill was cleaned up by an independent contractor and the spill site was sprayed to kill any canola plants. Two days after the spill, Slater and Gordon (2011a) announced that the Safe Food Foundation had retained Slater and Gordon to provide legal advice and support to the GM-free grain growers whose properties may be affected by the spillage.

Conclusion

Three Australian states (NSW, VIC, and WA) have now adopted GM canola. Each of these states has taken a step-wise approach to adoption. During the first year there were only limited plantings and analysis of the grains industry effectiveness of segregation of non-GM canola from GM canola. In the second year, unlimited plantings were permitted and there were further assessments of effectiveness of segregation.

The Western Australian approach has included much more monitoring and auditing of growers and grain handlers than the approach taken by NSW and VIC. Western Australia has taken a very thorough approach because WA produces and exports the most canola in all Australian states. The results of the WA audits and monitoring visits have shown that growers do comply with regulatory requirements and licence and stewardship requirements for using the technology. Overall, growers reported that it was worthwhile to adopt the additional protocols and practices to ensure effective segregation to enable access to the technology.

The ‘organic-famer case’ highlights the need for more work by all parts of the grains industry to work towards effective coexistence. There is a need for more discussion of workable thresholds. The available evidence suggests that the current zero-tolerance threshold

for organic systems and produce may be unsustainable and may harm the Australian organic industry.

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