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Submission to the South Australian Government on Regulations, Genetically Modified Crops Management Act 2004

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Introduction

The Institute of Health and Environmental Research Inc. (IHER) is a not-for-profit research institute with an interest in genetically modified (GM) organisms, particularly those destined for food. Its directors hold the following degrees: ordinary degrees in Medicine, Science and Agriculture, Honours Degrees in Agricultural Science and Organic Chemistry, a Master of Public Health, and PhDs in Plant Genetics and Medicine. The Directors have training and expertise in plant science, agriculture, medicine, chemistry, biochemistry, nutrition, epidemiology and biostatistics.

Matters for consideration

Firstly, IHER congratulates the South Australian Government on its prudent position to maintain the moratorium against growing GM crops in SA.

It may be a condition of the licence of the GM crop companies in Australia that they honour the moratoria in each State. Therefore, GM crop companies may be required by law to keep GM canola out of SA.

One key to maintaining the moratorium is the prevention of GM seeds and pollen from entering SA from Victoria and NSW. Regulations should therefore keep in mind that:

- Some farmers farm on both sides of the border and some Victorian farmers regularly bring their grain into SA silos if a SA silo is closer to them than a Victorian silo.
- Contract crop sprayers and harvesters can also work on both sides of the Victorian/SA border and hence may move GM canola seeds into SA on their machines. It takes days to thoroughly clean out a header and even then, it is virtually impossible to clean some of this equipment well enough to remove all GM seeds.
- SA cannot rely on the GM-industry-influenced suggestion for a buffer zone of 5m between GM and non-GM crops. There is ample evidence that pollen travels for kilometres on bees and the wind, and pollen and seeds can travel for kilometres on animals such as kangaroos and in the form of undigested seeds inside the stomachs of birds.
- SA cannot rely on Technology User Agreements (TUGs; Stewardship Programs) between a GM crop company and a farmer to prevent contamination from coming over the border into SA. These TUGs are put in place by a GM crop company to protect its interests, not the State's. Overseas TUGs simply prevent the farmer from doing things such as conducting research on the crop or giving it to others to do research on, and permit the GM company to monitor the farmer in subsequent years to ensure that he is not growing their canola without a licence. They do not prevent GM material from moving off-site to contaminate non-GM growers. And in fact, the Canadian experience is that their seed stocks were contaminated within a few years although all GM growers in Canada had to sign these TUGs. Furthermore, even if Monsanto has a closed-loop system this year and hence makes provisions in its TUGs to prevent GM material from contaminating non-GM farmers this year, it does not mean that future TUGs will contain these provisions.
- At the public meeting in Adelaide conducted by PIRSA on Monday 17 March, it was stated that harvested GM canola seeds grown in Victoria and NSW would be given to Cargill and Riverland Oilseeds. It should be noted that Riverland Oilseeds have a plant to crush canola in Millicent. If GM canola seeds are transported in trucks from Victoria or NSW to this factory, they will leak GM canola seeds along the roadsides to later grow and contaminate SA farmers' non-GM canola crops. There is therefore a need to prevent any transportation of GM canola into SA, particularly on trucks or trains. As truckies know, if a truck can't hold water, it can't hold canola.
- Canada found that the commercial cultivation of GM crops soon resulted in contamination of apparently non-GM canola seed stocks with GM canola seeds. Once this occurred, contamination became widespread. Protection of SA's seed stocks is therefore crucial. It is therefore important to require all seed stocks sold for planting in SA to be certified GM-free as a result of a DNA test by an accredited laboratory before it can be sold for planting, and for this to be audited by SA government inspectors using a DNA test.
- The SA govt appears to be relying on a belief that as long as GM contamination can be kept below 0.9%, individual farmers and SA as a whole can still call itself GM free. However, the ACCC has

made a finding that "no GM" or "GM free" means that **zero** GM material is present. Also, farmers, as least in WA, have to sign a declaration when they deliver grain as to whether **any** GM material is present. Moreover, for markets such as the EU, this level of contamination refers to contamination that is unexpected, rather than expected. SA may therefore need to be more rigorous in preventing contamination than it has come to believe.

SA has provisions to prevent fruit fly from entering and taking hold in the State and PIRSA should consider this as a model for preventing GM contamination in SA. That is, the fruit fly program has funds and staff set aside to monitor fruit fly in SA and established containment methods for eliminating any that get through border controls. This is an example of an active surveillance system. However, it appears that SA may adopt a passive rather than an active surveillance system as a form of policing for GM canola. That is, it appears that SA may wait for any report of GM canola being brought into the State and will then do some monitoring to determine if this is the case. For the fine of $200,000 to be effective, people who consider breaking the law will have to feel that they are likely to be caught if they do so. To use motoring laws as an example, stiff penalties for speeding or drink-driving would be useless if drivers knew the chance of being caught was close to zero. The incidence of speeding, drink driving etc has been been reduced by employing a process of stiff penalties and the perception by motorists that, due to frequent random breath testing units and use of speed cameras, if they break these laws, they are highly likely to get caught and hence have the penalty imposed upon them. Consequently, there is a need to employ an active surveillance system in SA of GM contamination where a number of field officers are employed to just monitor canola being grown in SA for contamination, particularly near the Victorian border, and hence to not only police the Act, but to be be **seen** to be policing the Act.

When testing seeds, seed stocks and growing crops, it is tempting to use the lateral flow tests ("strip tests", "litmus tests") on grain or leaf samples to determine if there is any GM contamination in seeds that have been bought for sowing, in plants growing in a field, or in harvested seeds. These tests are cheap to buy, take about 10 minutes to perform, and are easy to use by relatively untrained persons in the field under field conditions. Because of this, there are suggestions that these tests may be used in situations similar to the following:

- Seed merchants or farmers to check if the seed to be sown contains GM contamination.
- Farmers to determine if a growing crop contains GM contamination.
- Farmers and council workers to test if feral road-side canola plants are GM.
- Farmers or grain handlers to check whether the harvested crop contains GM contamination.

However, it is important to realise just how profoundly inaccurate these tests are. In particular, they regularly show zero levels of contamination for anything other than highly contaminated grain. They rely on detecting the presence of a protein that the GM plant makes. If the protein is detected, a particular section of the test strip goes red. For Bayer's canola, only 50 seeds can be tested at a time as the test cannot pick up levels of contamination at anything less than 1 seed in 50. This means that if the GM seed is evenly distributed through the non-GM seed, the test will only pick up levels of 2% contamination or higher. However, contamination is rarely evenly distributed. Therefore, in reality, the test cannot even pick up this level of contamination. The test kit comes with a table showing how accurate it is for varying confidence levels and numbers of samples of seeds. Essentially, if you want to be 99% accurate in your determination, taking one sample of 50 seeds will only reliably pick up 9.2% or higher contamination in the seed from which the sample was taken. Doing repeated tests on the same seed body by taking several 50-seed samples and testing each sample improves the accuracy of the test, but it still remains so inaccurate that taking six samples of the grain and testing with the kit will still only reliably pick up 1.5% or higher GM contamination if you want to be 99% accurate. These tests should therefore not be used by farmers, seed merchants, grain handlers, etc as they often give false negative results. That is, they often tell the tester that there is no GM contamination when significant contamination is in fact present. The tests are fairly accurate when used on leaf samples from a canola plant, where one plant per test strip is used. They can therefore be used by someone who wants to check whether canola plants growing on roadside verges are GM as long as one test strip per plant is used and leaf material rather than seed is tested.

In contrast, testing grain for GM contamination by DNA test is highly accurate. However, it is also expensive and in our experience usually takes several days from the time a sample is taken until the test result is available. At present, there is only one laboratory in Australia that is accredited by NATA to be able

to do GM DNA testing – AgriQuality in Melbourne.

IHER will soon be releasing a report on the relative accuracy of the protein-detecting "strip tests" compared to the DNA tests and the suitability of using each under various field conditions.

Recommendations

- SA should prohibit any canola seed from Victoria or NSW from coming into SA unless it is guaranteed to be GM-free by DNA test at an accredited laboratory in order to prevent GM seed transfer into SA. Currently, AgriQuality is the only lab with this accreditation in Australia.
- SA should require all canola seeds on sale by seed merchants for growing in SA to be certified GM-free by DNA test before they can be sold.
- Used contract spraying and harvesting machinery should be prevented from crossing the border into SA from Victoria or NSW.
- SA should not rely on a 5m buffer zone between a GM crop grown on the Victorian side of the border and a non-GM crop grown on the SA side of the border. This distance is clearly inadequate to prevent contamination of the SA crop. SA should ask Victoria to prohibit the cultivation of any GM crop within 10 km of the SA border to prevent pollen or seed drift into SA via wind or animals. If it refuses, SA should act to prevent canola being grown within 10 km of the Victorian border.
- SA should not think that the TUGs that farmers sign will prevent contamination of SA canola. TUGs have been developed by GM crop companies to protect their interests, not those of the State of SA.
- SA should employ an active surveillance system with dedicated staff to eg monitor feral canola plants growing near the Victorian border, audit crops grown in SA near the Victorian border for GM contamination and audit seed being sold for planting in SA.
- SA should indeed implement the $200,000 fine on anyone transporting a GM food crop into SA as reported to the Legislative Council on Wednesday 5th March by the Hon. IK Hunter.
- SA should not permit GM canola to be transported into the State or across the State for any reason, even for crushing into oil. Truck and train-based grain containers leak grain, which will cause GM canola to be widely dispersed alongside roads and railway tracks in SA to later grow and contaminate nearby farms.
- SA should ban the use of lateral flow tests ("strip tests"; litmus tests") to determine the level of GM contamination in canola grain, by farmers, silo workers, grain handlers, seed merchants etc due to their lack of accuracy and high rate of false negative results. They are accurate enough to be used on leaf samples from canola plants only, where one test strip per plant is used.
- SA should end the practice of allowing trial sites or bulking-up sites in SA for GM canola varieties that have been given commercial release status by the OGTR. There is clearly no need for them now that GM crop companies can plant commercial quantities in Victoria and NSW.