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The Secretary
House of Representatives Standing Committee
on Primary Industries and Regional Services
Parliament House
Canberra ACT 2600

PRIMARY PRODUCER ACCESS TO GENE TECHNOLOGY

Attached is a submission to the Inquiry into Primary Producer Access to Gene Technology, made on behalf of Monsanto Australia Limited by W.M. Blowes, Technical and Biotechnology Director for Monsanto.

The submission focuses on the development, pricing and performance of Ingard® cotton which is still the only genetically modified crop commercially available in Australia.

In addition to Ingard® cotton, Monsanto Australia Ltd is currently developing Roundup Ready® Cotton, Ingard® Cotton containing two Bt genes and Roundup Ready Canola for use by Australian farmers.

Monsanto has made several submissions to cover the potential import of food ingredients derived from genetically modified crops grown overseas. These include:

- Roundup Ready soybean (application A338)
- Roundup Ready canola (application A363)
- Bt corn (application A 346)
- Roundup Ready corn (application A362)
- Bt potato (application A382)
- Bt potato with leaf roll virus (application A383)
- Bt cotton (application A341)
- Bt and Roundup Ready cotton (application A355)

Monsanto believes it can assist the Committee most effectively by describing the Ingard® experience to date, but is ready to provide further information subject to the constraints on commercial confidentiality as the Inquiry proceeds should the Committee so desire.

Yours sincerely,

W.M Blowes PhD.
Director of Technology and Biotechnology,
Monsanto Australia Ltd.

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INTRODUCTION

This submission to the Inquiry into Primary Producer Access to Gene Technology is made behalf of Monsanto Australia Limited by W.M. Blowes, Technical Director and Biotechnology Director for the Agriculture Sector. The submission focuses on the development, pricing and performance of Ingard® Cotton which is the first genetically modified crop commercially available in this country.

Because there was considerable public controversy surrounding the pricing, performance and hence, value of Ingard Monsanto welcomes this opportunity to outline the history of the development of this product and provide the Committee with the commercial facts bearing in mind the sensitivity of some data.

THE DEVELOPMENT OF INGARD® COTTON

The Ingard® gene by Monsanto is the brand name for the gene expressing the CryIAc insecticidal protein which provides cotton with in-built protection to certain caterpillar pests, predominantly *Helicoverpa armigera* and *H. punctigera* in Australia.

The basic gene isolation, cotton transformation, protein characterisation and development of a comprehensive regulatory data package was done by Monsanto Co. USA to register and commercialise Bollgard® cotton which provides protection against similar but not identical cotton insect pests in the USA.

Australian varieties of Ingard® were developed by importing a "parental" line (C312) containing the gene from Monsanto Co. USA which was crossed and backcrossed with the best Australian varieties, thus transferring the Ingard® gene into CSIRO and Deltapine varieties.

Field testing of Ingard® cotton varieties in Australia was a collaborative effort by Monsanto Australia Ltd. CSIRO, Cotton Seed Distributors Ltd (CSD) and Deltapine Australia Ltd (DP) and a more comprehensive summary of the development of Ingard® for Australia is provided in the supporting document "Ingard® Gene by Monsanto - The chemistry, biology, efficacy health and environmental safety of cotton containing the Ingard® gene" which was produced for public dissemination at the time of registration.

THE MONSANTO, CSIRO, CSD, DELTAPINE RELATIONSHIP

The commercialisation of genetically modified crops requires many resources and organisational competencies and very few, if any, organisations possess all the required skills to produce a commercial product. In the case of regards cotton. Monsanto Australia had access to the patented technology and strong regulatory, agronomic and marketing abilities but lacked plant breeding skills and access to elite germplasm.

A relationship with CSIRO, CSD and DP was a logical complement to Monsanto's abilities. These organisations provided the local cotton varieties and plant breeding skills necessary to commercialise the technology and CSIRO also provided a local capability in gene technology that aided commercialisation.

To formalise this relationship Monsanto Co. USA and CSIRO signed a research agreement that contained no commercial content but did allow local breeding work to commence in 1991. This agreement has since been broadened to include other technologies.

Monsanto Co. then licensed the Ingard® gene to CSD and DP through commercial agreements with both companies that allowed both seed companies to develop and sell cotton seed varieties containing the Ingard® technology under certain defined conditions. Monsanto retained the right to “sell” the insect protection component that Ingard® provides which we do via a Technology User Agreement (TUA). The TUA is a contract between the grower and Monsanto which defines the conditions of sale.

Both CSD and DP receive substantial royalties from Monsanto, funded from the TUA, for providing access to local varieties and in turn, CSIRO through their commercial arrangement with CSD, receive payment for research performed in the exclusive development and breeding of Ingard® cotton varieties. In addition to this, Monsanto Australia has financially supported research conducted by CSIRO on a case by case basis. A recent example of this is the financial support by Monsanto of a two year Post Doctorial Fellowship to study the survival of transgenic cotton in the natural environment of Northern Australia.

Other research providers have also undertaken work on Ingard® cotton e.g. the CRDC. It is not unusual for the industry to do research on new technologies to provide an impartial analysis to their grower constituents. However, this is not research instigated by Monsanto and we have now become so sensitive to this issue that we have rejected offers of research collaboration to avoid the criticism that growers are paying for the development of Monsanto's technology. While we cannot and will not stop other people from researching Ingard cotton, our rule of thumb is that Monsanto or our Ingard® collaborators will do any research required for the registration and commercialisation of the technology.

THE PRICING OF INGARD® COTTON

Prior to the release of Ingard® cotton, Monsanto commissioned an analysis of the value of the Ingard® technology through an independent market research company. Pivotal to the analysis was the performance of the Ingard® product which at that time, was believed to be similar to the USA Bollgard® product based on field work that had been done locally. The analysis assumed that roughly 90% of the insecticide sprays used to control *Helicoverpa spp* would be replaced by the use of Ingard® cotton. On this basis Monsanto determined that a price of \$245 per hectare would provide good value to 60% of the irrigated cotton growers. This was a similar methodology to the approach we took to price Bollgard® cotton in the USA.

The initial reaction of the Cotton Industry to Monsanto's pricing of Ingard® was generally negative, because of perceptions that the price of Ingard® would be similar to that charged by Monsanto in the United States for Bollgard® cotton. After consultation with the Cotton Industry and to help alleviate some of these concerns, Ingard® was introduced to the market with a value guarantee program that warranted growers a rebate on the purchase price if their Ingard® crop did not provide \$245 of value in reduced *Helicoverpa* spray compared with a comparable conventional cotton crop grown on their property. The value guarantee program provided growers with the opportunity to use the technology with the assurance that they would be no worse off financially versus their traditional insect spray costs. In many instances growers were better off as they obtained greater value than \$245 per hectare.

As can be seen in the next section, the performance of Ingard® in Australian conditions was less than the 90% reduction in spray costs achieved in the USA on their pests, and in the small plot field trials conducted in Australia prior to commercialisation. As a result, Monsanto rebated growers over \$3m in the first two years of use.

At the end of the second year of use it was clear that under Australian conditions Ingard® cotton reduced *Helicoverpa* sprays by 40 to 50% on average compared with conventional cotton. The Cotton Industry, through their ACIC committee, indicated strongly to Monsanto that growers did not want the value guarantee program even though it provided insurance to all growers against reduced performance. Subsequently they asked us to adopt a lowest possible price strategy that reflected value to most cotton growers while allowing the collaborative technology providers a reasonable return on investment. As a result we stripped considerable cost from our: marketing and rebate program and reduced the purchase price to \$185/ha with a \$30 rebate for adherence to the compliance and insect management plan, resulting in a net purchase price of \$155 to the grower. In the current season, pricing appears not to be an issue and Ingard® performance has provided good value as part of an integrated insect management program.

Another commonly held perception is that Monsanto has made excessive profits at the expense of the Australian cotton grower. This is not the case and Monsanto Australia has yet to recoup the development costs for this product. Even at the original purchase price of \$245/ha if the seed company loyalty and retail agents fees are subtracted plus Monsanto's marketing and technical expenses and the rebate for the value guarantee, the net profit after tax is considerably less than that of the proprietary conventional insecticides that Ingard® has replaced.

It is also generally not recognised that:

- Monsanto Australia spends in excess of \$2m per annum to support the Ingard® product and in bringing the next generation cotton products to market.
- Monsanto Australia will not make a positive return on its investment in this technology until 2001 and Monsanto Co will not recoup the development costs for biotechnology research for some considerable time after that.
- Ingard® cotton is not a particularly profitable product compared to other technologies servicing the cotton industry and is quite unattractive at this stage compared with other patented technology.

THE PERFORMANCE OF INGARD® COTTON

The field performance of Ingard® cotton has been extensively reviewed elsewhere. The latest available Ingard® Cotton Research and Performance Review 1997-8 is attached. Performance in the current cotton season is believed to be better due to the additional benefit derived from tip worm control in Ingard® crops.

While the field performance of Ingard® has not been at the level initially expected by Monsanto, CSIRO or the Cotton Industry the benefits are still substantial and provide value to the cotton grower and community alike. Several facts are worth highlighting:

- If 50% of insecticide sprays were again saved across 80,000 hectares in the current season, this translates to about 1 million litres of insecticide not sprayed on cotton.
- Endosulfan sprays have been reduced by about 70% on Ingard® cotton fields providing growers with a substantial benefit in environmentally sensitive cotton growing areas.
- The reduction in this amount of insecticide also substantially reduces plastic drum use and disposal, water used for spray application and aerial spray operation time all environmental advantages that tend to be overlooked.
- After the third year of use most growers have learnt how to use Ingard® cotton effectively and derive value from the technology. As a testament to this the Transgenic and Insect Management Subcommittee of ACGRA has supported Monsanto's recommendation for a substantial increase in Ingard® area for the coming season.

In conclusion, the commercialisation of Ingard® cotton in Australia has weathered the issues relating to the expected pricing and efficacy of the product. After three years of use on about 170,000 hectares, Ingard® cotton provides value to the growers using the product and to the general community through the very substantial environmental benefits provided by the product. While some concern regarding the original pricing of Ingard® is still apparent the Committee should take into account that Monsanto provided a safety net against financial loss to growers by introducing the value guarantee rebate and has continued to be flexible and responsive to Cotton Industry concerns so that all stakeholders can benefit from the use of the technology.

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