CropLife AUSTRALIA

SUBMISSION TO

AGRICULTURE INDUSTRY ACTION PLAN

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1. INTRODUCTION

CropLife Australia (CropLife) is the peak industry organisation representing the agricultural chemical and biotechnology (plant science) sector in Australia. CropLife represents the innovators, developers, manufacturers and formulators of crop protection and agricultural biotechnology products. The plant science industry provides products to protect crops against pests, weeds and diseases, as well as developing crop biotechnologies that are key to the nation's agricultural productivity, sustainability and food security. The plant science industry is worth more than $1.5 billion a year to the Australian economy and directly employs thousands of people across the country.

CropLife and its members are committed to the stewardship of their products throughout their lifecycle and to ensuring that human health, environment and trade issues associated with agricultural chemical use in Australia are responsibly and sustainably managed. Our member companies spend more than $13 million a year on stewardship activities to ensure the safe and effective use of their products. CropLife ensures the responsible use of these products through its mandatory industry code of conduct and has set a benchmark for industry stewardship through programs such as ***drum****MUSTER*, ChemClear® and Agsafe Accreditation and Training. Our stewardship activities demonstrate our commitment to managing the impacts associated with container waste and unwanted chemicals.

The world's population is predicted to increase to over 9 billion by 2050, requiring an increase in global food production of 70 per cent. Providing enough food in the context of production constraints, volatile consumption patterns and a changing climate will be an unprecedented scientific, economic and public policy challenge. The situation provides an opportunity for New South Wales farmers to both assist in the global food security effort and to profit from increased demand for their agricultural products. By adopting profitable, productive and innovative farming practices, such as the sustainable and efficient use of crop protection products and genetically modified (GM) crops, the New South Wales farming sector will be able to produce more with less, strengthening both the sector and the regional communities that rely on it.

Meeting the challenges presented by sustainably increasing global demand for food will require open, rational and science-based policies that support all production systems, including existing and future production tools. Profitable, productive and innovative production systems will include the conventional systems reliant on the timely, responsible and considered application of crop protection products in ways that maximise yield and manage potential environmental and other risks. Crop protection products (including herbicides, insecticides and fungicides) are currently relied upon to increase global food production by between 30 per cent and 50 per cent. Supporting industries to develop and introduce newer crop protection products that are better targeted to Australian pests, climates and crops will help Australia and New South Wales in particular play its part in addressing global food security.

GM crops, an application of modern biotechnology, are just another step along the same path of technological innovation that led to Australian agricultural inventions such as the combine harvester and 'Federation' wheat varieties. The utilisation of these innovations has delivered safe and affordable food to the nation and the world. Despite a proven record of safety, every GM crop is subjected to intense global scrutiny. Globally, government regulators have independently reached the same conclusion – that cultivation of GM crops poses no greater risk to human health or the environment than cultivation of conventional (non-GM) varieties. More importantly, they are a necessary and important tool in meeting the global food and nutrition security challenge.

GM crops have over a period of 16 years demonstrated their sustainability credentials, including by way of:

- reducing overall pesticide use and encouraging the substitution of older pesticides with pesticides that are better targeted, more efficient and have a reduced environmental impact;
- reducing tillage (facilitating no-till farming);
- reducing on-farm fuel use;
- reducing CO_2 emissions from farming operations;
- reducing pesticide runoff into waterways;
- increasing soil carbon storage; and
- increasing water-use efficiency.

GM crops currently under research and development in Australia will help Australian farmers to combat environmental stresses such as drought, acid soils and salinity, which are being caused by climatic changes and previous non-sustainable farming practices. There is also considerable Australian research into GM traits that will bring health benefits to consumers, such as healthier starches, and oils modified to be lower in saturated fats and with improved cooking qualities.

One threat to the potential success of this important agricultural innovation is the lack of a nationally consistent scheme for gene technology regulation in Australia. Unnecessary and overly stringent regulation brings with it an equally unnecessary cost burden. All regulation should be commensurate with the associated risk, cost and benefit to the community. The current gene technology regulatory system in Australia already imposes a much greater level of regulatory burden on the industry than occurs in some other countries, and this burden is exacerbated by unclear and inconsistent market interventions by state governments.

If New South Wales fails to properly embrace and exploit the opportunities offered by agricultural biotechnology and equally agricultural chemical crop protection innovation, the consequences will be profound. The New South Wales agricultural industry has one of the earliest and best opportunities to exploit the many opportunities offered by both crop biotechnology and the plant science industry. The Government of New South Wales needs to encourage continued research and development in agricultural biotechnology. There is also a need for a paradigm shift in thinking from regulating the science (as it has been proven safe) to facilitating the growth of the New South Wales economy by driving the agricultural biotechnology industry to its full potential.

Given that Australian farmers produce almost 93 per cent of Australia's daily domestic food supply, CropLife commends the Government of New South Wales for having the foresight to investigate and report on the profitable, productive and innovative farming practices that will assist New South Wales farmers to improve their future productivity and sustainability.

This submission focuses on the 'Productivity, Profitability and Innovation' and 'Business and Regulatory' issues identified in the Issues Paper and submits that a truly productive, profitable and innovative agricultural industry in New South Wales is not tenable without the adoption of crop protection and crop biotechnology products.

2. ENVIRONMENTAL AND SOCIO-ECONOMIC BENEFITS OF CROP BIOTECHNOLOGY AND THE COST OF NON-ADOPTION

The first generation of GM crops, with productivity enhancing input traits such as insect resistance and herbicide tolerance, have been rapidly adopted around the globe providing clear agronomic, economic, environmental and social benefits to those 17.3 million farmers in 28 countries who have accessed the technology[1].

Australia grew 688,000 hectares of GM crops in 2012, comprising 512,000 hectares of GM cotton and 176,000 hectares of GM canola[2]. Enhanced Australian farm income from GM crops is estimated at US$611 million for the period 1996 to 2011 and the benefits for 2011 alone at US$188.3 million.[3]

2.1 GM crops in Australia: a snapshot of GM cotton and GM canola benefits to sustainable agriculture

In Australia, growing GM cotton varieties has seen environmental benefits resulting from decreased insecticide use and changes in the type of insecticides and herbicides used. First grown in 1996, almost 100 per cent of Australia's cotton crop is now grown with GM varieties[4]. Cultivation of GM insect resistant cotton varieties has enabled a reduction in the amount of insecticide active ingredient used by up to 85 per cent[5, 6]. This, in conjunction with industry stewardship practices, has greatly reduced the potential for chemical runoff into rivers in cotton growing regions of Australia[7].

The types of chemical being used have also changed. Because of the 'in-built' insecticide in GM insect resistant cotton, insect control can be more targeted and specific meaning there is less of an impact on non-target organisms thereby allowing beneficial (ie. predatory insects) to remain in the crop. It is worth noting that the insecticidal 'Bt' protein expressed in GM insect resistant cotton is also an approved input in organic agriculture. In-crop fuel use is also reduced as a result of fewer insecticide applications being required.

GM herbicide tolerant cotton has increased the adoption of minimum tillage practices and the replacement of some herbicides with less hazardous alternatives. By facilitating minimum tillage, GM herbicide tolerant cotton has reduced soil erosion, increased retention of soil moisture and increased soil carbon. Reducing the use of some residual herbicides, together with good industry stewardship, has decreased the potential for herbicide runoff into waterways[8].

Economic and social benefits have also been realised through the adoption of GM crops in Australia. For example, in GM cotton growing regions, the incidence of on-farm workplace incidents has decreased as a result of reduced insecticide spraying and also the reduced need for hand weeding in cotton fields. Community perceptions of the Australian cotton industry have also markedly improved since GM cotton was first grown in 1996[9]. Cultivation of GM cotton varieties has allowed cotton farmers to spend less time on the tractor and more time with their families, an important social implication for rural Australia that should not be overlooked.

The adoption of GM herbicide tolerant canola varieties in Australia has also resulted in environmental benefits and increased environmental sustainability. For example, just as for those farmers growing GM herbicide tolerant cotton, cultivation of GM herbicide tolerant canola has allowed farmers in New South Wales, Victoria and Western Australia to use selective, targeted and lower hazard crop protection products.

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1 James, C 2012. 'Global Status of Commercialized Biotech/GM Crops: 2012'. *ISAAA Brief No. 44*. ISAAA: Ithaca, NY.

2 *Ibid.*

3 Brookes G and Barfoot P 2013. 'GM crops: global socio-economic and environmental impacts 1996-2011'. *PG Economics,* Dorchester, May

4 Cotton Australia Cotton Fact File: Biotechnology http://cottonaustralia.com.au/cotton-library/fact-sheets/cotton-fact-file-biotechnology accessed 5 June 2012.

5 Hattersley P, Johnson H, Glover J, Foster M, Wesley V and Mewett O 2009. 'Plant Gene Technology: Improving the Productivity of Australian Agriculture'. Australian Government Bureau of Rural Sciences, Canberra.

6 Holtzapffel R, Mewett O, Wesley V and Hattersley P 2008. 'Genetically modified crops: tools for insect pest and weed control in cotton and canola'. Australian Government Bureau of Rural Sciences, Canberra.

7 *Ibid.*

8 Hattersley *et al*., Op. cit.

9 Holtzapffel *et al.*, Op. cit.

Herbicide tolerant canola provides farmers with more effective weed control, particularly for those broad leaf weeds, such as wild radish, that are closely related to canola. Varieties of non-GM herbicide tolerant canola have been grown in Australia since 1993 (triazine tolerant) and 2000 (imidazolinone tolerant). The introduction of glyphosate tolerant GM canola merely adds another weed management option to farmers' weed control toolbox. Both non-GM and GM herbicide tolerant canola technologies have led the shift to no-till or conservation tillage systems with associated environmental benefits such as reduced soil erosion and increased soil water retention.

The agronomic benefits of GM (when compared to non-GM) herbicide tolerant canola include increasing the options for in-crop weed control, allowing herbicide rotations that address the risk of herbicide resistant weeds developing and increasing the yield in subsequent cereal crops, which could be adversely affected by herbicide carry over from the herbicides used in non-GM herbicide tolerant crops.

2.2 The global socio-economic and environmental impacts of GM crops

The most recent annual report on the global socio-economic and environmental impacts of GM crops from the British consultancy firm PG Economics indicated continued considerable economic and environmental benefits to the farmers and general public in countries where GM crops are grown[10]. The report indicated that the net benefit at the farm level in 2011 from growing GM crops was US$20 billion. For the 16 year period (1996-2011) covered by the report, the global farm income gain has been US$98.2 billion. Australian GM cotton and canola farmers have realised a benefit of over US$611 million in the period 1996-2011[11].

If GM crops had not been available to the 16.7 million farmers growing them in 2011, maintaining global production at 2011 levels would have required additional plantings equivalent to 33 per cent of the arable land in Australia[12]. That's over 15 million hectares of forest and natural habitat saved by the use of crop biotechnology.

The PG Economics report also notes that GM crops have contributed significantly to reducing the release of greenhouse gas emissions from agricultural practices. This results from less fuel use and additional soil carbon storage from reduced tillage associated with GM crops. In 2011, this was equivalent to removing 23 billion kg of carbon dioxide from the atmosphere, or equal to removing 10.2 million cars (80 per cent of cars registered in Australia) from the road for one year[13].

The report notes that crop biotechnology has contributed to a significant reduction in the environmental impact associated with insecticide and herbicide use on the areas devoted to GM crops. From 1996-2011, the use of pesticides on the global GM crop area was reduced by 474 million kg of active ingredient (9 per cent total reduction) and the environmental impact associated with herbicide and insecticide use on GM crops, as measured by the Environmental Impact Quotient indicator, fell by 18.3 per cent[14].

A recent study reported in the science journal *Nature*, found that in China over the past 16 years, vast plantings of GM insect-resistant crops have helped to control several major insect pests and reduced the need for additional insecticide applications by promoting the bio-control services offered by beneficial predatory insects[15]. On conventional crops, these beneficial insects were killed by the broad-spectrum insecticides used to control the major target pests (for example, cotton bollworm). This study found a marked increase in the abundance of three arthropod predators (ladybirds, lacewings and spiders) and a decreased abundance of aphid pests associated with the widespread adoption of GM insect-resistant cotton and reduced insecticide sprays in this crop[16].

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10 Brookes G and Barfoot P 2013. *Op. Cit.*

11 Australian GM cotton farm income benefit US$583.8 million 1996-2011; GM canola farm income benefit US$27.5 million 2008-2011.

12 Brookes G and Barfoot P 2013. *Op. Cit.*

13 *Ibid.*

14 *Ibid.*

15 Lu Y, Wu K, Jiang Y, Guo Y and Desneux N 2012. 'Widespread adoption of Bt cotton and insecticide decrease promotes bio control services'. *Nature* doi: 10. 1038/nature11153 published online 13 June 2012.

16 *Ibid.*

2.3 The economic benefit to New South Wales from adopting crop biotechnology

In 2008, the then Australian Bureau of Agricultural and Resource Economics (ABARE) analysed the economic effects of GM crop adoption in Australia. If New South Wales fails to properly embrace and exploit the opportunities that are offered by agricultural biotechnology and equally agricultural chemical crop protection innovation, the consequences will be profound. Adoption of GM canola was estimated to increase both state and regional gross income, with the benefits from early adoption significantly higher than from a delayed adoption. ABARE modelling indicated that the estimated economic benefit to New South Wales farmers (excluding the Murray Catchment Management Area) from adopting GM canola from 2008-09 for the following ten years would be equivalent to $273 million in 2006-07 dollars[17]. The cumulative benefit of adopting GM canola for the economy of the Murray Catchment Management Area alone was projected to be $76 million in 2006-07 dollars[18].

A separate ABARE study concluded that Australia's export competiveness would be adversely affected and Australia would forego significant economic gains by delaying the uptake of GM oilseeds and future GM grain crops if emerging economies (such as Argentina, Brazil and China) increased their adoption of these GM crops[19].

The New South Wales agricultural industry has one of the earliest and best opportunities to exploit the many opportunities offered by both crop biotechnology and the plant science industry. The Government of New South Wales needs to encourage continued research and development in agricultural biotechnology. There is also a need for a paradigm shift in thinking from regulating the science (as it has been proven safe) to facilitating the growth of the New South Wales economy by driving the agricultural biotechnology industry to its full potential.

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17 Acworth W, Yainshet A and Curtotti R 2008, 'Economic impacts of GM crops in Australia'. Prepared for the Australian Government Department of Agriculture, Fisheries and Forestry, Canberra

18 *Ibid*

19 Nossal K, Abdalla A, Curtotti R, Tran QT and Brown A 2008, *GM crops in emerging economies: impacts on Australian agriculture*, ABARE Research Report 08.3 prepared for the Australian Government Department of Agriculture, Fisheries and Forestry, Canberra.

3. HEALTH, SAFETY AND NUTRITIONAL IMPACT OF CROP BIOTECHNOLOGY

Commercial production of GM crops is only permitted when environmental and consumer safety has been thoroughly demonstrated. In Australia, The Gene Technology Regulator is responsible for licensing any dealings with genetically modified organisms (GMOs). Food Standards Australia New Zealand is required to approve any GM food ingredient and the Australian Pesticides and Veterinary Medicines Authority regulates those GM crops with inbuilt pest protection. The GM canola and GM cotton crops that are grown in Australia have passed all of these regulatory assessments.

The *Gene Technology Act 2000* (Cth) was intended to establish a national system of regulating GMOs. Despite this intention, most states have implemented legislation to address 'marketing concerns' that are neither consistent nor transparent. This unclear path to market was well demonstrated in 2003 when the Office of the Gene Technology Regulator approved GM canola for commercial release and all the canola growing states implemented politically motivated moratoria on commercial cultivation of this crop. This led to years of delays, which reduced the management options for Australian farmers and created real uncertainty about the future of GM crops in Australia. State bans also cost food producers and consumers, with one analysis concluding that nationally, the bans on GM canola cultivation cost $157 million per annum[20].

New South Wales introduced the *Gene Technology (GM Crop Moratorium) Act 2003* (NSW) to enable a blanket moratorium on the commercial cultivation of all GM food plants, except those approved by the Minister. On 15 June 2011, with the support of the New South Wales Farmers Association, the New South Wales Government decided to extend its moratorium on growing GM food crops in New South Wales for an additional 10 years beyond the end of June 2011 when the regulations were due to expire. This intervention means that there is no clear path to market for the developers of GM crops in New South Wales, even when licence applicants have satisfied the requirements of the Commonwealth *Gene Technology Act* and it has been clearly demonstrated in other states that effects on trade are not only negligible, but in fact non-existent.

In Australia, GM crops are intensively studied and rigorously regulated. All regulation should be commensurate with the associated risk, cost and benefit to the community. CropLife supports the continued use of science-based risk assessment as the basis for sensible decision making. It is a key principle of good governance that governments should only intervene in a market where there is demonstrated market failure. However, state government moratoria on commercial production of GM crops have never identified any such failings.

The regulation of GM crops by state governments creates uncertainty that acts as a major disincentive for private investment and as a brake on technological innovation in the sector. This uncertainty is exacerbated by the fact that the legislation is often written so that it prevents the Minister from granting a licence unless certain conditions are met. It does not, however, compel the Minister to grant a licence if an application meets these same conditions. As a result, there remains a very real possibility that a company would invest significantly in bringing a technology to market in Australia with data to address all the federal and state regulations and still be unable to sell its product commercially.

This sort of significant disincentive to private investment in Australian agricultural biotechnology is counter-productive if New South Wales and indeed the rest of the nation, wishes to have a productive, profitable and innovative agriculture sector in the future. Perhaps ironically, this situation is also a large threat to the otherwise highly successful public investments by state governments in developing GM crops.

The failure to implement a consistent national regulatory scheme has created crippling uncertainty in the agricultural biotechnology industry in New South Wales and completely undermined the effective regulation of GM crops. Both of these issues need to be addressed if New South Wales is to continue to have productive, profitable and innovative food choices available to everyone.

The Government of New South Wales should recognise that evidence to date has demonstrated that GM crops do not pose any unique risks to human health and the environment, and consequently the New South Wales moratorium on these crops is not commensurate with the risk.

[20] Norton R.M., Roush, R.T., (2007) Canola and Australian Farming Systems 2003-2007.

3.1 The safety of crop biotechnology product has been continually reaffirmed over time

A significant number of peer-reviewed scientific research papers have been published that describe the results of biosafety research on biotech crops. The GENetic Engineering Risk Atlas (GENERA) is a long-term project to catalogue, examine, and communicate the findings of all peer-reviewed scientific publications that can be used to analyse the relative risks of genetically engineered plants. Currently listing 600 peer-reviewed papers, the overwhelming weight of scientific consensus in these papers confirms that approved genetically modified crops are as safe for human health and the environment as their conventional counterparts[21].

Biotech crops have been grown and consumed for more than 16 years and people around the world have eaten billions of meals containing biotech-derived foods or ingredients. There are no substantiated scientific reports of any food safety issues related to the consumption of biotech crops.

3.2 Nutritional benefits of biotech crops

Crop biotechnology is being used to develop nutrient-dense varieties of staple crops that could be grown for a fraction of the recurrent estimated annual costs of supplementation programs in developing countries and could reach far more people. The nutritional quality of staple foods can be substantially improved using transgenic methods compared to what can be accomplished using traditional breeding.

For example, Golden Rice (with elevated levels of pro-Vitamin A) is expected to be available in 2013 in the Philippines and probably followed by Bangladesh, Indonesia and Vietnam. In developing countries, 200-300 million children of preschool age are at risk of Vitamin A deficiency, which is the single most important cause of childhood blindness in developing countries. Every year, about half a million children go blind as a result of Vitamin A deficiency and 70 per cent of those die within a year of losing their sight.

Golden rice could have been available and saving children's lives for many years were it not for the ongoing activism of anti-humanitarian organisations, who first claimed the elevated levels of pro-Vitamin A in the modified rice were toxic. When this was shown to be patently untrue, these activist organisations changed tack and claimed the level of pro-Vitamin A in the rice was in fact too *low* to have any meaningful biologic effect.

Biotechnology is also being used to produce vegetable oils with low saturated fats and properly balanced essential fatty acids which are associated with reducing the risk of heart disease and stroke, important for brain function and essential for growth and development of infants.

A recent Stanford University meta-analysis[22] of 240 existing studies comparing organic and conventionally produced foods did not find evidence that organic foods are healthier or carry fewer health risks than conventional alternatives. No consistent differences were seen in the vitamin content of organic products and only one nutrient, phosphorous, was significantly higher in organic versus conventionally grown produce (the researchers note that because exceptionally few people have a phosphorous deficiency, this is of little clinical significance). The researchers also stressed that consumers need to be aware that organic foods are not 100 per cent free of pesticides. These researchers concluded that their study showed there is a lot of variation between farming practices, and that there are many different factors that go beyond method of production, which are important in predicting nutritional quality and harms.

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21 The GENERA list of peer reviewed studies in to the safety of GM crops can be accessed here: http://www.biofortified.org/genera/studies-for-genera/.

22 Smith-Spangler, C, Brandeau, M L, Hunter, G E, Bavinger, J C, Pearson, M, Eschbach, P J, Sundaram, V, Liu, H, Schirmer, P, Stave, C, Olkin, I & Bravata, D M (2012) 'Are Organic Foods Safer or Healthier Than Conventional Alternatives?' *Ann Intern Med*, *157*, 348-366.

4. PRODUCTIVITY, PROFITABILITY AND INNOVATION MUST RECOGNISE COEXISTENCE

To achieve an agricultural system that promotes productivity, profitability and innovation, the Government of New South Wales must recognise that the variety in farming systems, environments and crops means that a 'one-size-fits-all' approach is neither logical nor effective. Measures that are environmentally sustainable in market gardening in peri-urban areas surrounding Sydney may not be economically sustainable in a broadacre cropping/grazing system. Any approach the Government of New South Wales takes to improving agricultural productivity, profitability and innovation must recognise this reality.

Coexistence is the practice of growing crops with different quality characteristics or intended for different markets in the same vicinity without becoming comingled and thereby possibly compromising the economic value of both. Coexistence is based on the premise that all famers should be free to cultivate the crops of their choice using the production system they prefer, be it using crop biotech, conventional or organic methods.

Coexistence of various production methods is not a new concept to the agricultural community. Famers have practiced coexistence for generations in order to meet customer demands for different types of products. Breeders and farmers are accustomed to breeding and producing different crops such as bread and noodle wheat, feed and malting barley, and high- and zero-erucic acid canola alongside each other. They are also accustomed to producing certified seed to meet defined purity standards. This experience demonstrates that coexistence of a wide range of production methods is not a problem, provided technical and procedural guidelines are carefully followed and cooperation between neighbouring farms is encouraged. This applies equally to the use of modern crop protection and crop biotechnology products in farming systems.

Coexistence is not about environmental or health risks because it refers only to the use of crop biotechnologies or crop protection products that have been approved as safe for the environment and human health by Australian Government regulators.

CropLife's position is that all agricultural production systems should have an equal opportunity to contribute to the agri-food production system under free market conditions. Preference for one production system over another should not be the result of artificial, discriminatory and impractical public policy decisions made by state governments as is currently the case in New South Wales with blanket moratorium on the commercial cultivation of all GM food plants (recognising that Ministerial approval has been given for commercial cultivation of GM canola). Despite being in place for 10 years, there is absolutely no empirical evidence that this ban has resulted in trade and/or marketing benefits for New South Wales farmers; but rather, as indicated previously, it is likely to have resulted in missed opportunities for New South Wales. .

5. AGRICULTURAL CHEMICAL PRODUCTS SUPPORTING PRODUCTIVITY, PROFITABILITY AND INNOVATION

All agricultural production systems, whether they be conventional, organic or reliant on biotechnologies employ strategies to control pests, weeds and diseases. Without the responsible use of crop protection products, as much as half of the world's food supply could be lost. Ensuring that New South Wales' farmers have access to modern technologies to protect their crops will support the ongoing productivity, profitability and innovation of agriculture in New South Wales.

CropLife members support all production systems by providing chemical products to meet the needs of New South Wales' farmers. Our members' success is intrinsically linked with that of all Australian farmers. Ultimately, a productive, profitable and innovative agricultural system for New South Wales will involve balancing a series of potentially competing issues and making decisions about the most effective, efficient and sustainable way to manage a farm taking into account the type of production system, climate, soil types, pest pressures and economic considerations.

Farmers ultimately have the most detailed and extensive knowledge about their farms. Any agricultural industry action plan will need to recognise the critical role that farmers play in ensuring the ongoing sustainability of their farms. Giving farmers greater choice and options to manage their land and production systems provides them with the best opportunity to make decisions that promote the ongoing productivity, profitability and innovation of New South Wales agriculture.

5.1 Regulatory Environment

Australia is fortunate to have a comprehensive, although somewhat expensive and inefficient regulatory environment to ensure the safety, efficacy and sustainability of agricultural chemical products used in Australia. The Australian Pesticides and Veterinary Medicines Authority (APVMA) conducts a pre-market risk assessment of all new pesticide products before they are registered and sold. The APVMA's assessment manages the sustainability of pesticide products by ensuring that products, when used in accordance with the directions specified on the label, present no unacceptable risks to users, consumers, the environment or trade.

The pre-market risk assessment is complemented by the New South Wales *Pesticides Act 1999,* which ensures that pesticides can only be used in accordance with the prescribed label conditions (with some exceptions). Controls imposed by this Act ensure that agricultural chemical products are used in the manner envisaged by the APVMA when undertaking its risk assessment process. CropLife strongly supports the rigorous approach to control of use currently imposed in New South Wales as providing the best basis for sustainably supporting productivity and profitability.

CropLife members recognise they have an ongoing responsibility to ensure the sustainability of their products. For this reason, CropLife internationally has developed and supported the *International Code of Conduct on the Distribution and Use of Pesticides.* This Code specifies obligations about the stewardship of agricultural chemicals throughout their life cycle, from innovation, discovery and development through to ultimate disposal of packaging waste. In addition, CropLife Australia members must also abide by the *CropLife Australia Code of Conduct,* and the *Agsafe Code of Conduct.* These stewardship schemes specify the obligations of CropLife Australia members, including requiring participation in the ***drum****MUSTER* and ChemClear® industry stewardship schemes.

Additionally, many CropLife members engage in significant supplementary stewardship of their products, which ensures that the products sold by a company are being used in accordance with all the conditions and precautions necessary for that product.

Collectively, these controls help maintain the sustainability of New South Wales agriculture by responsibly and efficiently managing farm inputs. The ***drum****MUSTER* and ChemClear® industry stewardship schemes also address environmental and health and safety concerns by disposing and recycling farm chemical waste. To date, these programs have disposed of in excess of 22 million chemical containers and over 319,000lt/kg of old and unwanted chemicals. It is important to recognise that these programs are undertaken voluntarily by industry, not through any regulation, again reinforcing how the issues of sustainability are culturally entrenched both in Australia and internationally.

5.2 Organic Production Systems

Organic production systems often face unique challenges to remain productive and compliant with the standards required by organic certification systems. Plant pests and diseases are just as attracted to organic products as conventionally grown produce. Plant protection tools are therefore critical to support organic production systems.

CropLife Australia members provide agricultural chemical products to organic farmers across Australia, including organic insecticides and fungicides. Provided that farmers use these products in accordance with the directions specified on the label, farmers can be assured that any environmental, human health or trade impacts can be managed and avoided.

Organic production in Australia continues to experience high growth rates. Should this trend continue, it will increase the demand for organic crop protection products, as well as newer products to meet specific needs. The economic sustainability of these emerging industries will be reliant on the availability of adequate crop protection tools.

Many organic farms currently have limited crop protection options due to the current small size of the industry. While this may change in the future, the scientific data required to develop and register new products for organic producers can exceed the likely size of the market. The 'minor-use' problem, where the economic return to a registrant from a new product use is exceeded by the regulatory cost of regulatory requirements for approving a new use, occurs across all agriculture in Australia.

5.3 Conventional Broadacre Production Systems

For conventional production systems, sustainability needs to consider different pressures and factors that have an impact on the sustainability of the farming system. Broadacre farming of cereals and grains is an internationally competitive and trade exposed market. Standards for grain quality and safety can have serious impacts for market access should they be breached. The international trade in grains also presents significant biosecurity risks that must be controlled to prevent the spread of potentially disastrous pest species. The sustainability of this sector is dependent upon the efficient and responsible use of critical inputs (including pesticides, among others) to remain both economically and environmentally sustainable.

Indeed, modern broadacre production systems adopt approaches that are both economically and environmentally sustainable, while also producing significant social benefits. For example:

- Modern herbicides and insecticides are highly selective. Modern selective insecticides can target harmful pests while leaving beneficial insects untouched, generating both productivity and biodiversity benefits. Selective herbicides can target only weeds while leaving a growing crop unharmed. This allows farmers to choose the best crop protection technologies to suit the particular circumstances of their farm, as well as providing for flexibility in the production system.
- The responsible and sustainable use of herbicides enables the use of minimum and no-till production systems. Replacing tillage with the use of herbicides provides improved weed control, increasing yields while also providing ancillary environmental benefits. Reducing the need for tillage reduces carbon emissions, improves soil structure and soil biodiversity, and assists soils retain both water and organic matter.
- Modern farming systems also assist in reducing total pest and weed pressures, for the benefit of other production systems that may choose not to use pesticide tools.

Conventional production systems are responsible for the vast majority of food production. They succeed by producing safe, sustainable and abundant food through minimising production inputs and maximising yield. The efficiencies inherent in these production systems enable farmers to feed more people with less land, water and other resources. This reduces pressure on remaining areas of wilderness to be converted to agricultural production. As one of the key drivers of biodiversity loss globally is loss of habitat for native species, the environmental benefits of producing more food more efficiently is significant.

5.4. Conventional Horticultural Production Systems

Horticultural production systems use modern pesticide products to efficiently produce higher quality, safer food. Horticultural systems often operate in locations that can lead to potentially conflicting land uses that can require better farm management practices. Chemical application often needs to be undertaken in ways that prevent any unanticipated impacts upon neighbouring land uses. Careful application and product choice, as well as user training and licensing can help achieve this aim, and allow productive horticultural enterprises to prosper.

Critically, ongoing innovation and product development can support new and emerging horticultural industries. As farmers seek to diversify their production to meet market demands and to build the resilience of their enterprises, new products will be required to address new applications on minor and specialty crops. This not only builds the economic sustainability of farming enterprises generally, but also may result in the development of new products and markets that are better suited to individual farm circumstances.

6. CONCLUSION

The Issues Paper draws particular attention to the Vision for New South Wales agriculture. CropLife submits that the inclusion of crop protection and crop biotechnology products is essential to the development of any industry action plan that seeks to be productive, profitable and innovative and avoid unnecessary 'red-tape' or regulation that is not commensurate with risk.

Maintaining the productivity, profitability and innovativeness of agricultural production systems will not be achieved by limiting the options for farmers to manage their businesses. Each individual farm faces specific challenges in terms of climate, soil type, farming system, demography and economy. These circumstances all have an impact upon the choices available to farmers to manage their farms. For example, the challenges faced by a wine grape grower in the Hunter Valley will be different to a broadacre grains farmer in the west of the state.

There is a wide variety of farming systems and circumstances throughout New South Wales. Productivity, profitability and innovation will only be delivered by enabling farmers to make management choices and decisions that best suit their individual circumstances. For some farmers, this may mean adopting organic production systems to leverage high-value specialty markets. For other farmers this may mean adopting innovative new agricultural chemical products or genetically modified crops for agronomic purposes.

Any decisions made by farmers in consideration of their particular circumstances can support the ongoing productivity, profitability and innovation of agriculture in New South Wales. Ultimately, it is those farmers that best understand the pressures faced by a particular farm. Regulatory settings in New South Wales to support productive, profitable and innovative agriculture must continue to allow farmers to make decisions in the best interests of their own business. This will mean allowing farmers to adopt any of a range of farming systems, or a combination of them.

To achieve an agricultural system that promotes productivity, profitability and innovation, the variety in farming systems, environments and crops means that a 'one-size-fits-all' approach is neither logical nor effective. Measures that are environmentally sustainable in market gardening in peri-urban areas surrounding Sydney may not be economically sustainable in a cropping/grazing system. Any approach to improving agricultural productivity, profitability and innovation must recognise this reality.

CropLife and its members are committed to supporting all farming systems in Australia by providing farmers with the innovation, technologies, tools and products that they need to ensure sustainable and profitable farming practices. Providing for access to reliable, safe, effective and efficient new technology crops and crop protection products will enhance all New South Wales' agricultural systems.