CropLife AUSTRALIA

SUBMISSION TO

SENATE RURAL AND REGIONAL AFFAIRS AND TRANSPORT REFERENCES COMMITTEE

FUTURE OF THE BEEKEEPING AND POLLINATION SERVICE INDUSTRIES IN AUSTRALIA

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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 chemical crop protection products and agricultural biotechnologies. 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 $17.6 billion a year to the Australian economy and directly employs thousands of people across the country. CropLife Australia is a member of CropLife Asia and part of the CropLife International Federation of 91 CropLife national associations globally.

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 industry's commitment to managing the impacts associated with container waste and unwanted chemicals.

The plant science industry's crop protection products include herbicides, insecticides and fungicides that are critical to maintaining and improving Australia's agricultural productivity and meeting the global food security challenges of the coming decades. CropLife member companies now spend more than $250 million (US) testing more than 140,000 compounds over a 10 year period to discover just one new successful crop protection product. Without access to these tools, farmers may potentially lose as much as 50 per cent of their annual crop production to pests, weeds and diseases. According to the Deloitte Access Economics report released by CropLife Australia in November 2013, 68 per cent of the total value of Australian crop production can be attributed to the use of crop protection products.

IMPORTANCE OF A HEALTHY POLLINATOR INDUSTRY

Pollinators are essential to agriculture and as a result, a healthy pollinator industry is of paramount importance to the plant science industry. Pollinators (birds, bees and other insects) are essential to producing crops from flowering plants. Farmers rely on pollination services from both wild bees and domesticated honey bees. Global increases in the demand for food mean that bees are being called upon to pollinate more crops than ever before, and this trend is set to continue. At the same time, environmental pressures, parasites, viruses and other toxins continue to place increasing stress on bees.

The bulk volume of plants produced for human consumption and animal feed in Australia are crops such as wheat, barley and rice, which self-pollinate. Many foods, such as almonds, watermelons, pumpkins, canola and avocado are, however, dependent on pollinators and yield reductions of over 90 per cent would occur without pollinating insects. While it is difficult to quantify the value of pollination by bees, 65 per cent of horticultural and agricultural crops introduced into Australia since European settlement require honey bees for pollination. The vast majority of these bees are wild European honey bees.

In addition to the value of bees as pollinators, the Australian honey and other bee products industry is worth approximately $90 million per year to the Australian economy.

HONEY BEE HEALTH

Australia has one of the healthiest bee colonies in the world, although in Australia and globally honey bee health is being challenged by numerous factors. As depicted in *Figure 1: The many factors influencing bee colony health,* honey bee health can be affected by a number of different factors, including parasites (such as the parasitic mite *Varroa destructor*), disease and other stress factors (such as habitat loss, poor nutrition, climate change, and chemical exposure). The plant science industry has a vested interest in protecting pollinators and is committed to thoroughly researching and protecting bee health.

The many factors influencing bee colony health

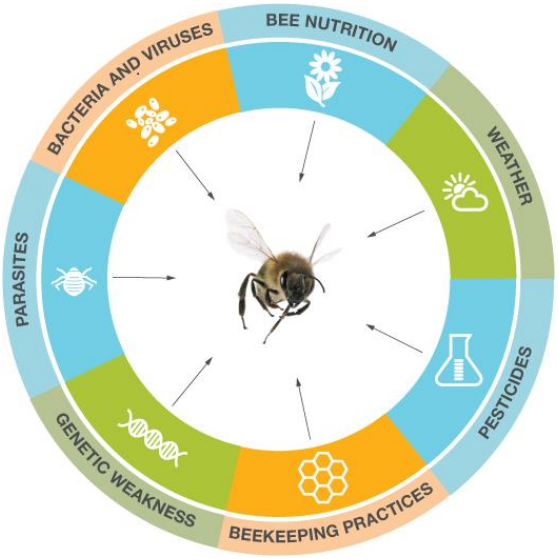

Figure 1: The many factors influencing bee colony health

Recent international media indicates that global honey bee populations are in decline, which is due to a lack of understanding of the difference between honey bee colony losses and declines. Honey bee colony losses are considered short-term, for example, a higher than average over-wintering loss of 40 per cent as opposed to a more typical 15 per cent. Whereas, honey bee colony declines are considered to be a long-term honey bee population decline. Globally, some geographic regions may be experiencing honey bee colony declines, but as *Figure 2 – Global honey bee colony numbers* illustrates, global honey bee colony populations are in fact increasing.

Global honey bee colony numbers

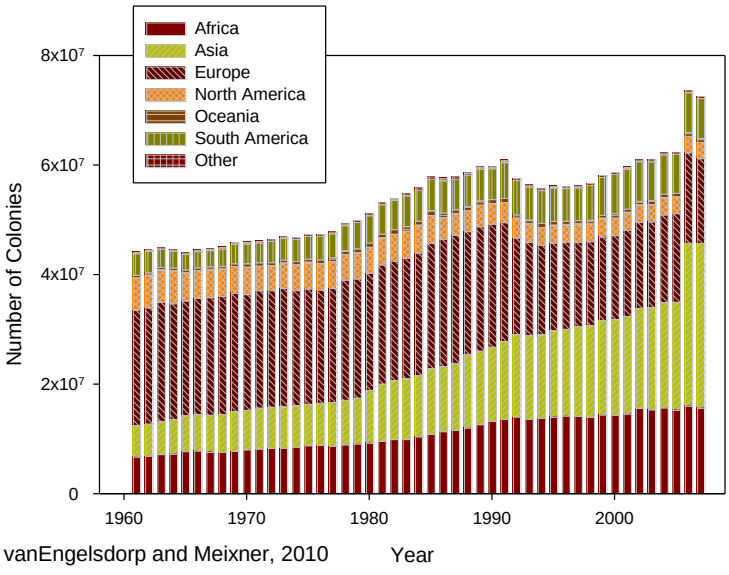

Figure 2: Global honey bee colony numbers

MAJOR RISKS

As referenced earlier, the plant science industry's crop protection products include herbicides, insecticides and fungicides that are critical to maintaining and improving Australia's agricultural productivity. Obviously, insecticides by design present a risk to many insects, including bees and since the 1950's have been used by the majority of Australian farmers to help protect their crops from insect pests. Australia also has one of the healthiest bee colonies in the world, proving that the beekeeping and pollination service industries and modern farming practices successfully co-exist and together, improve Australia's agricultural productivity.

Historically, inappropriate insecticide use has been responsible for a number of fatal incidents with bees, but the introduction of modern insecticide formulations has significantly reduced the risk of similar incidents occurring. One family of insecticides introduced in the late 1990s, the neonicotinoids, were specifically designed to be softer on bees and other beneficial insects. Neonicotinoids are now widely used in Australia and internationally as a seed treatment. This means the seed is coated by a film, which contains the product and is designed to protect the seed or seedling from being eaten by insects. This approach has reduced spray applications to crops and therefore the potential for harmful exposure to bees. There have, however, been occasional bee health related incidents overseas due to seed planting dust[1], which is now being addressed through CropLife member research and development into improved formulation and application technology, and product stewardship to ensure best practices are being consistently applied.

Some activist organisations internationally have sought to establish a link between neonicotinoids and bee colony health. This claim is neither supported by scientific evidence or real world experience. The Australian farming sector has successfully used neonicotinoid insecticides for decades and has one of the healthiest bee colonies in the world. The good health of the Australian bee colony is due to Australia being free of some major pests and diseases that have devastated bee colonies internationally. Therefore, the potential introduction of these pests into Australia should be considered as one of the most significant risks to Australian agriculture. It is also important to note that it is the plant science industry that provides products to protect bees from pests and diseases through investing significant time and resources into research and development.

Colony Collapse Disorder (CCD) has in recent years resulted in significant losses of beehives across Europe and the United States. CCD commonly describes a phenomenon where there are few or no adult worker bees present in the hive, there are no dead bees in the hive and a live queen remains. Organisations around the world have been trying to identify the cause of CCD but have not yet been successful. After six years of investigation, the United States Department of Agriculture (USDA) have found many factors associated with CCD, including parasites (such as the Varroa mite) and pathogens, poor nutrition, pesticides, bee management practices, habitat fragmentation, loss of habitat and agricultural practices. They have, however, been unable to prove any of these factors, or a combination of these factors, to be the cause of CCD, although recent scientific research points toward a combination of parasitic mites (specifically Varroa mite) and pathogens (such as Nosema and viral diseases) as main factors.

The range of factors responsible for CCD differs from continent to continent and from region to region, but the active role of Varroa mite as a vector of bee viruses is a common factor. As such, limiting the Varroa mite's role in the spread of disease as a viral reservoir, incubator, activator and transmitter has been identified as critical. The USDA reports that Varroa mite has been frequently found in hives that have been devastated by CCD. Australia is the only country in the world with a significant beekeeping industry that does not have Varroa mite. CropLife understands that the wild European bee population in Australia would be unlikely to survive if Varroa mite were to become endemic in Australia. Considering the vast majority of pollination in Australia is undertaken by the wild European bee population, this outcome would be devastating for Australian agriculture. Australia was also the last continent free of small hive beetle, a major pest of honey bees that arrived around the year 2000 and has since become endemic. This highlights the importance of the National Bee Pest Surveillance Program which assists in Australia maintaining its status as Varroa mite free.

[1] *Oliver R (2012), Neonicotinoids: Trying To Make Sense of the Science. First published in Bee Journal, August, 2012.*

CropLife members have recognised the risk global bee population losses has to global food production and are investing significantly in bee health research, while also developing new Varroa mite surveillance and control pesticides. There are increasing incidences of Varroa mite resistance to currently available Varroa mite surveillance and control pesticides internationally. Having the required tools available to detect and control Varroa mite before it enters Australia is essential to minimise its potentially devastating impact. It is therefore critical that Australia has a responsive and efficient regulator of agricultural chemicals and veterinary medicines, so that all Varroa mite control and surveillance products available internationally are available in Australia to ensure the Australian beekeeping and pollination service industries have a viable future.

ADVANCES IN PESTICIDE APPLICATION

Bees and pesticides are both essential to the success of modern Australian agriculture. More than one-third of the world's food production comes from crops that depend on pollination. Modern crop protection products are critical tools that farmers use to protect their crops from the vast array of potentially devastating pests. In fact, without pesticides the world would lose at least 50 per cent of its food, feed and fibre crops.

Internationally, the plant science industry is committed to developing products that allow farmers to grow crops in an environmentally sustainable manner. Seed treatments are an excellent example of how the seed industry and the plant science industry are innovating for the future of modern agriculture. Seed treatments are an effective tool for combating the negative impacts of diseases, insects, nematodes and other pests at the time of planting and thereafter, consequently assisting Australian farmers produce higher quality crops, while minimising the impact to humans, animals (including bees) and the environment. Seed treatments evolved as a way to protect seeds and crops while also minimising potential exposures of non-target insects such as bees. Indeed, these modern seed applied insecticides have been used for a decade with almost no incidences of negative impacts on bees.

Only small quantities of the insecticide are needed to coat the seed, which reduces the need to spray insecticides to control insects. In fact, in contrast to a traditional spray treatment where 100 per cent of a field is treated, less than 1 per cent of the field is treated when a modern seed treatment is used. This helps to reduce the exposure of pollinators and other beneficial insects (as well as human and environmental exposures) throughout the growing season. Furthermore, in Australia the climate is such that most years treated seed is planted during a period when bees are not actively foraging.

The weight of the scientific evidence clearly shows that these products do not affect long-term bee colony health. A few recent studies have claimed some impact on bees, but a careful evaluation of the research shows significant errors were made in the experimental design, or incorrect conclusions were drawn from the data. Unfortunately, these studies have received wide media attention. There is no geographical correlation between long-term bee losses and insecticide use. Although some neonicotinoids are toxic to bees upon direct contact (as are many insecticides), they are used in a way that minimises any direct exposure to bees. Under normal field use, the exposure to bees is at very low levels, far too low to cause harmful effects. Independent, long-term, controlled field tests have repeatedly shown no effects on bee mortality, weight gain, worker longevity, brood development, honey yield, and overwinter survival relative to bees in areas where treated seed was not used. Many of these studies have been published in peer reviewed journals and presented at international conferences. For example, a recent Canadian study by G. Christopher Cutler and Cynthia D. Scott- Dupree was published in the Journal of Economic Entomology, 100(3): pages 765-772 (2007).

STEWARDSHIP

CropLife members are committed to stewardship throughout the entire product lifecycle. Successful stewardship requires collaboration, engagement and support by all stakeholders. Where this occurs, the community can be assured that best practices are being consistently applied for safety of users, consumers and the environment, including managing any risks to pollinators. All members comply with the CropLife Code of Conduct, the International Code of Conduct on the Distribution and Use of Pesticides and participate in the waste management stewardship schemes ***drum****MUSTER* and ChemClear®, as well as the Agsafe Accreditation and Training Program. Stewardship is an essential complement to the APVMA's assessment that establishes processes and procedures to efficiently manage these products throughout their lifecycle. This includes through transport, usage, storage and disposal of the product.

To minimise the risks insecticides present to bees and other beneficial insects, it is important to ensure appropriate measures are put in place to minimise off-target movement of chemicals. This, in turn, minimises exposure to bees, other beneficial insects and the environment generally. Fipronil is a broad spectrum insecticide that can be dangerous to bees if inadvertently exposed. Fipronil is also an example of how appropriate measures can mitigate risks and achieve effective outcomes. Using innovative application technologies, fipronil is safely and successfully used within bee hives to control small hive beetle. The beekeeping and pollination service industries are therefore able to use this pesticide within beehives to effectively control this recently introduced and destructive pest without harming their bees and as a result improve the ongoing viability of their industry.

It is also important that globally, farmers understand the tremendous importance of pollinators to the success of modern agriculture. To ensure Canadian farmers are well equipped to use crop protection products safely, CropLife Australia's sister organisation, CropLife Canada has developed technical advice on best practices enabling farmers to ensure treated seeds are planted in a way that protects non-target organisms such as bees. Other sister organisations, CropLife America and Agcarm in New Zealand, in conjunction with their respective seed industry body counterparts, have developed guides to seed treatment stewardship. These guides are to be used as educational tools and as general guidance to assist product users in voluntarily developing and implementing stewardship practices related to the use of seed treatments and treated seed.

CropLife Australia is drawing upon these global resources to assist in the development of a best management practice guide for seed applied insecticides to ensure off-target movement of chemicals is minimised. CropLife is proactively engaged with the APVMA and the Australian Honey Bee Industry Council, and will be working collaboratively on this new stewardship initiative to further mitigate risk to pollinators. The initiative will also aim to improve communication between growers and beekeepers on agricultural chemical use and hive location. Improved communication will allow beekeepers to confirm that hives are located upwind of the treatment sites or in shelter belts and have access to clean water sources. It will also permit beekeepers to temporarily protect or relocate hives where feasible.

INTERNATIONAL EFFORT

Many countries around the world rely on honey bees for commercial pollination of certain crops, particularly in the northern hemisphere. In recent years, however, some regions of the world have been suffering from an increase in losses in their managed honey bee colonies. CropLife Australia actively participates in international working groups that analyse issues affecting bee health and associated global research. Such working groups have developed, for example, a soon to be published document on the factors affecting global bee health. The data assessed confirms the honey bee parasitic mite, *Varroa destructor*, as the major factor in colony loss, determining that regions that have established mite populations, suffer consistently higher colony losses than those without.

CropLife Canada has been assisting the Canadian Senate Agriculture and Forestry Committee in their study on bee health. Feedback provided from a range of stakeholders. including academia and producer groups, has been consistent in its call for a science based approach that respects the needs of farmers, beekeepers and the environment. It also identified that bee health is a complex issue requiring all stakeholders to work together; confirming that focussing on one small portion of the issue would do nothing to build pollinator strength in Canada.

CropLife member companies have recognised the risk global bee population losses has to global food production and are investing significantly in bee health research, while also developing new Varroa mite surveillance and control pesticides.

SCIENCE BASED RISK ASSESSMENTS

The Australian Pesticides and Veterinary Medicines Authority (APVMA) is a globally respected, scientifically and technically sound regulator of agricultural chemicals. The Authority is actively engaged in programs of the Organisation for Economic Co-operation and Development to share assessment of new agricultural chemicals through international partnerships with pesticide regulators in the United States, Canada and the United Kingdom. The Authority's expertise and scientific credibility are well recognised within Australia, throughout the Asia-Pacific and globally. While CropLife has from time to time, constructively criticised the APVMA publicly, that criticism has always been restricted to the regulator's efficiency and not its technical competencies.

Crop protection products must be used sparingly, carefully and responsibly. Crop protection product companies spend significant amounts of time, money and effort on establishing specific, safe and effective instructions for the proper use of their products and produce labels accordingly. The responsible use of crop protection products must be supported by a regulatory scheme that maximises the benefits associated with their responsible use and minimises the risk to human health and the environment. In Australia, the APVMA conducts rigorous risk assessments on all agricultural chemical products, which ensures that when used in accordance with label directions, agricultural chemical products present no unacceptable risk to users, consumers, pollinators or the environment.

Label directions for agricultural chemical products are regulated by the APVMA and must comply with all regulatory requirements. In addition, labels may also include appropriate statements to alert growers and applicators of potential hazards to bees and other pollinators, and provide information regarding best management practices to be employed during use.

In August 2012, the APVMA announced a review of the use of neonicotinoid insecticides in Australia to see if they present more of a risk to honey bee health than other pesticides that have been in use for many years. CropLife members have and will continue to respond to the APVMA's request for scientific input into the review as it provides the opportunity for the APVMA to clarify the data requirements for bee risk assessments and harmonise bee related warning statements on product labels. This will lead to less confusion by growers and thereby reduce risk to pollinators, whilst improving consistency and efficiency in regulatory outcomes.

CONCLUSION

Healthy beekeeping and pollination service industries are essential for Australian agriculture. CropLife Australia and our global partners recognise the importance of pollinators to agriculture and are proactively engaged in issues on bee health and are investing significant amounts of time, money and resources into finding solutions.

Maintaining a healthy bee colony by minimising environmental pressures, parasites, viruses and other toxins that lead to increased stress on bees is of vital importance. The current good health of the Australian bee colony is due to Australia being free of some of the major pests and diseases that have devastated bee colonies internationally. The potential introduction of these pests into Australia should be considered as one of the most significant risks to Australian agriculture. Some activist organisations have sought to establish a link between pesticides and bee colony health. This claim is neither supported by scientific evidence or real world experience.

Australia is the only country in the world with a significant beekeeping industry that does not have the Varroa mite or suffer the effects of Colony Collapse Disorder. Australia was also the last continent free of small hive beetle. This highlights the importance of the National Bee Pest Surveillance Program which assists in Australia maintaining its status as Varroa mite free. It is also critical that Australia has a responsive and efficient regulator of agricultural chemicals and veterinary medicines to ensure all available tools used internationally to detect and control Varroa mite are available in Australia when they are needed.

CropLife trusts that this submission will assist the Senate Rural and Regional Affairs and Transport References Committee to address issues associated with the future of the beekeeping and pollination service industries in Australia.