CROP POLLINATION ASSOCIATION INC.

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SUMMER 2011/12

Special Points of Interest:

- *President's Report*
- *Bee Kill on Lychees*
- *Pesticides Applied to Crops & Honey Bee Toxicity*
- *Effect of Fungicides on Bees*

PRESIDENT's REPORT

Everyone's busy doing their bit, and some, whether it's making the time to help at Cairns, attending meetings, making sure farmers get their bees, providing advice.

Briefly I'm glad to hear about things like the Q & A type forum in Sydney at the Food Expo on Food Security (Max Witton, Denis Anderson, Jodie Goldsworthy etc.)

I believe our Association needs to re-tackle the better protection by law for beekeepers affected by pesticides, both by labels and getting rid of grey areas, as the response by AHBIC to our motion was inadequate, before too much time goes past.

I had a conversation with an agronomist at Forbes who works for a lucerne seed company. Many of our clients that were growing lucerne seed in the MIA and Lachlan valleys will not be doing so this year due to many different reasons - floods, storms, too risky, drop in seed price. However, she did indicate that she had 600 hectares of seed this year to pollinate and she was given the CPA website to distribute to the growers. It was disappointing to hear that many growers were going to take the gamble on bush bees from the river.

I urge beekeeper pollinators to be totally across and aware of all pesticide use on the farms we pollinate on. Don't assume that chemicals are not used on crops such as almonds. Be acutely aware that, mixing chemicals, fertilisers, fungicides is a bigger problem than we know, and a couple of extra letters in a long chemical name can be catastrophic for us.

I would like more information for our next conference on what they do spray for in almonds; I heard there were thrips in some orchards this year; thresholds before they do spray. I would like to see all beekeepers who go to almonds get the information of what is sprayed and when. I think I need the information for my honey Statutory Declarations. When you hear that they have to spray 24 hrs 7 days a week, sometimes because they don't have enough tractors or staff to cover the area, I'd like to know what is sprayed, and that drift was not directly going to get onto the bee gear. After our presentation from Syngenta on fungicides at our conference, it's pretty obvious we don't know much about the effects on bees from these fungicides that are sprayed onto the open flowers and pollen then brought back to the hive, that in most cases the LD50 test was used to assess the effect on bees (LD50 assesses loss of adult bees)?

However, new science is revealing that the losses are occurring in young adult 7- and 8-day old bees at very, very low levels, which renders the LD50 test, now used to assess the toxicity of pesticides before registration and later use in agriculture, now redundant.

Inside this issue:

PRESIDENT'S REPORT.....

I was privileged to hear Dr Jamie D Ellis (University of Florida) talk at the S.A. conference when I was there for an AHBIC meeting. He is currently leading a team working on sub lethal effects to bees, (melifera and others) of pesticides. They have been asked to advise the EPA in America on new testing procedures.

Roughly if bees ingest pesticides, fungicides it can damage their stomach, which is also a huge part of their immune system. This lets the viruses etc. do their damage where they normally wouldn't. I would like our Association to discuss being associated and kept up to date with the progress.

We are currently having problems pollinating onions due to off farm conditions - excess honey and pollen, yellow box, bimble box, lucerne, Paterson's curse, turnip, fuzzy box, hill gum. Doubling the stocking rate didn't help.

Finally assist your Newsletter by writing to the Secretary with ideas for articles, or your own experiences, and to encourage new members.

CPA President, Bryn Jones

Editors Note: *600 hectares of lucerne (even at the lowest stocking rates) should equate to over $120,000 of pollination work for a beekeeper.*

CHEMICALS AND BEES DO NOT MIX !
DEAD BEES MAKE POOR POLLINATORS

BEE KILL ON LYCHEES

A beekeeper had 40 hives on lychee pollination work. This was the 3rd year of pollination at this farm. When the bees were removed from the orchard there were huge matts of dead bees in front of every hive. The beekeeper removed all the hives from the orchard.

The next day he checked the hives and there were enough adult bees to support a 3 frame nuc at best. He then went to the pub and had a long lunch. After investigation it was discovered that Samuari was sprayed on the 2000 acres of grapes on the other side of the lychee orchard. The grapes and the lychees are on the same farm but run by different managers.

The beekeeper will try to get compensation from the farm owner. I wish him luck.

The beekeeper was advised to reduce hives to small as possible, remove as many combs as possible from the bottom box and budget on requeening ASAP plus get them on the best pollen source he can find.

Editors Note: *If we hear the outcome we will keep you posted. This episode stresses the importance of factoring in the risk of accidental chemical spray when setting a pollination price. A pollination price of $40 or $50 does not include any spray risk costs. In my opinion due to the increased risk of fireblight, apple and pear pollination prices should have increased by at least $30.00 per hive for 2011 onwards. This should equate to $100 + per hive for apple pollination.*

EXCLUSIVE: BEES FACING A POISONED SPRING

New kind of pesticide, widely used in UK, may be helping to kill off the world's honeybees
By Michael McCarthy, Environment Editor *Thursday, 20 January 2011*
http://www.independent.co.uk/environment/nature/exclusive-bees-facing-a-poisonedspring-2189267.html

A new generation of pesticides is making honeybees far more susceptible to disease, even at tiny doses, and may be a clue to the mysterious colony collapse disorder that has devastated bees across the world, the US government's leading bee researcher has found. Yet the discovery has remained unpublished for nearly two years since it was made by the **US Department of Agriculture's Bee Research Laboratory**.

The release of such a finding from the American government's own bee lab would put a major question mark over the use of neonicotinoid insecticides – relatively new compounds which mimic the insect-killing properties of nicotine, and which are increasingly used on crops in the US, Britain and around the world.

Bayer, the German chemicals giant which developed the insecticides and makes most of them, insists that they are safe for bees if used properly, but they have already been widely linked to bee mortality. The US findings raise questions about the substance used in the bee lab's experiment, ***imidacloprid***, which was Bayer's top-selling insecticide in 2009, earning the company £510m. The worry is that neonicotinoids, which are neurotoxins – that is, they attack the central nervous system – are also "systemic", meaning they are taken up into every part of the plant which is treated with them, including the pollen and nectar. This means that bees and other pollinating insects can absorb them and carry them back to their hives or nests – even if they are not the insecticide's target species. in Britain, more than 1.4 million acres were treated with the chemical in 2008, as part of total neonicotinoid use of more than 2.5 million acres – about a quarter of Britain's arable cropland.

EXCLUSIVE: BEES FACING A POISONED SPRING CONT:

The American study, led by **Dr Jeffrey Pettis**, research leader at the US government bee lab in Beltsville, Maryland, has demonstrated that the insects' vulnerability to infection is increased by the presence of imidacloprid, even at the most microscopic doses. Dr Pettis and his team found that increased disease infection happened even when the levels of the insecticide were so tiny that they could not subsequently be detected in the bees, although the researchers knew that they had been dosed with it. Dr Pettis told The Independent his research had now been put forward for publication. ***"***

[It] was completed almost two years ago but it has been too long in getting out," he said. ***"I have submitted my manuscript to a new journal but cannot give a publication date or share more of this with you at this time."***

However, it is known about, because Dr Pettis and a member of his team, Dennis van Engelsdorp, of Penn State University – both leaders in research focusing on colony collapse disorder (CCD) – have spoken about it at some length in a film about bee deaths which has been shown widely in Europe, but not yet in Britain or the US – although it has been seen by The Independent.

In ***The Strange Disappearance of The Bees***, made by the American film-maker Mark Daniels, Pettis and van Engelsdorp reveal that they exposed two groups of bees to the well-known bee disease nosema. One of the groups was also fed tiny doses of imidacloprid. There was a higher uptake of infection in the bees fed the insecticide, even though it could not subsequently be detected, which raises the possibility that such a phenomenon occurring in the wild might be simply undetectable.

Although the US study remains unpublished, it has been almost exactly replicated by French researchers at the **National Institute for Agricultural Research** in **Avignon**. They published their study in the journal ***Environmental Microbiology*** and said:

"We demonstrated that the interaction between nosema and a neonicotinoid (imidacloprid) significantly weakened honeybees."

Neonicotinoids have attracted growing controversy since their introduction by Bayer in the 1990s, and have been blamed by some beekeepers and environmental campaigners as a potential cause of CCD, first observed in the US in 2006, in which billions of worker bees abruptly disappear from their hives.

Between 20 and 40 per cent of American hives have been affected, and CCD has since been observed in several other countries from France to Taiwan, though it has not yet been detected in Britain. Although Bayer insists its products are bee-safe, French and German beekeepers have blamed them for large bee losses. Neonicotinoids have been banned, to different degrees, in France, Germany, Italy and Slovenia, although they are freely sold and widely used in the US and Britain.

In the UK, the Co-op has banned them from farms from which it sources vegetables, but the Government has rejected appeals from beekeepers and environmentalists for their use to be suspended as a precaution. This week, however, an Early-Day Motion was tabled in the Commons by Martin Caton, the Labour MP for Gower, calling again for the Government to suspend use of the compounds following major new controversy in the US surrounding Bayer's latest neonicotinoid – clothianidin – which is increasingly being used in Britain. In November, a leaked internal document from the US Environmental Protection Agency showed that it was continuing to license clothianidin, even though its own scientists reported that the tests Bayer carried out to show the compound was safe were invalid.

Leading the calls for neonicotinoids to be banned in the Britain is ***Buglife***, the invertebrate conservation charity, which last year published a review of all the research done on the chemicals' impact on "non-target" insects such as honeybees and other pollinators. Yesterday the **Buglife** director, **Matt Shardlow,** said of the Pettis study:

"This new research from America confirms that at very, very low concentrations neonicotinoid chemicals can make a honeybee vulnerable to fatal disease. If these pesticides are causing large numbers of honeybees, bumblebees, solitary bees, hoverflies and moths to get sick and die from diseases they would otherwise have survived, then neonicotinoid chemicals could be the main cause of both colony collapse disorder and the loss of wild pollinator populations. The weight of evidence against neonicotinoids is becoming irresistible – Government should act now to ban the risky uses of these toxins."

Bayer insists its neonicotinoids are safe for bees when used properly. **Dr Julian Little**, a spokesman for Bayer Crop Science UK, said it was difficult for it to comment on an unpublished study.

"It makes it impossible to look at their methods, it makes it impossible to check whether you can repeat the work, you don't know where they got the imidacloprid from, you don't know how they gave that to the bees," he said.

But he added:

"I'm sure there are some very interesting effects Dr Pettis has seen in a laboratory, but in reality, when you get to what's important to everybody, which is what happens in the field, you don't see these things happening. Bees are very, very important insects to Bayer Crop Science and we recognise their importance."

COMMENT FROM THE INDEPENDENT NEWSPAPER, LONDON

Michael McCarthy: This isn't just about bees – it affects everything
Thursday, 20 January 2011

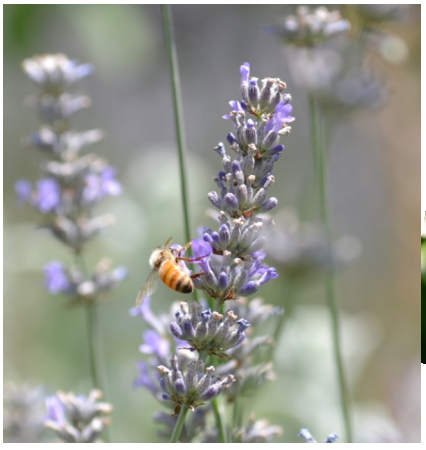
http://www.independent.co.uk/opinion/commentators/michael-mccarthy-this-isntjust-about-bees-ndash-it-affects-everything-2189269.html

How will we characterise our age? By the birth of the internet? The rise of China? The first black US president? Perhaps in all those ways. But we could also say, less obviously but perhaps more fundamentally, that ours is the age when the insects disappeared. Edward O Wilson, America's greatest naturalist, called invertebrates – the insects, the spiders, the worms, the snails and all their fellows – ***"the little things that run the world".*** He meant that these tiny creatures were at the very base of much of life. For example, in the case of pollination, where bees and other insect pollinators fertilise plants, and enable them to produce fruit and seeds, by transferring pollen between flowers.

In the past five years or so, pollinators, honeybees in particular, have started to vanish in many places, and governments have woken up to the problem, as pollination is worth £billions. In fact, insects such as butterflies, moths, bumblebees and mayflies have been disappearing for a long time, although hardly anyone except specialists has noticed or cared.

Their decline began half a century ago with the introduction of pesticides and other agricultural chemicals. But the decline has gathered pace over the past decade with the introduction of ***systemic*** insecticides such as the ***neonicotinoids***, which are absorbed into every part of the plant, including the pollen and nectar which pollinating insects collect.

It is too simple to say that one has caused the other, but the link is being made. In his book ***The Systemic Insecticides – A Disaster In The Making***, the Dutch toxicologist **Henk Tennekes** argues that neonicotinoids are now present in much of Holland's surface water, killing off aquatic insects and leading to a decline in insect-eating birds across the country. If we care about the little things that run the world, we must wake up to what could be their biggest threat yet.



PESTICIDES APPLIED TO CROPS AND HONEY BEE TOXICITY

Managed Pollinator Coordinated Agriculture Program (CAP) Updates

A National Research and Extension Initiative to Reverse Pollinator Decline

This is part of an ongoing series of updates from the Managed Pollinator CAP. Additional installments can be found at the:
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More information about the CAP can be found at:
http://www.beeccdcap.uga.edu

*A detailed review of the literature on Pesticides and Honey Bee Toxicity by R. Johnson, M. Ellis, C. Mullin and M. Fraizer can be found in the May 2010 Special Issue of Apidologie on Honey Bee Health. Please see Johnson, R.M., M.D. Ellis, C. Mullin, M. Frazier. 2010. Pesticides and honey bee toxicity - USA. Invited review. Apidologie. DOI: 10.1051/apdio/2110018..

CAP UPDATES: 7

Marion Ellis, University of Nebraska, Lincoln

- *Jointly published in the American Bee Journal and in Bee Culture, May 2010.*

Abstract: This article discusses the role that pesticides applied to crops may play in honey bee health. Although no one pesticide has been clearly associated with causing colony collapse disorder, there is evidence that the additive and synergistic effects of multiple pesticide exposures are harming bees. Pesticide use patterns have changed in the past decade, and this article reviews research on how crop pest control practices are affecting honey bee health. It then concludes with a discussion of the current risk assessment protocols to protect honey bees and how they are being amended to address current issues and concerns.

Pesticides applied to crops: The recent sequencing of the honey bee genome provides a possible explanation for the sensitivity of honey bees to pesticides; relative to other insect genomes, the honey bee genome is markedly deficient in the number of genes encoding detoxification enzymes (Claudianos et al., 2006). This notable difference renders honey bees more susceptible to pesticides than other insects, and beekeeping has been negatively impacted by pesticides applied to crops for as long as pesticides have been used.

Despite the dependence on honey bees for the pollination of crops in the USA, colony numbers have declined by 45% over the past 60 years (NAS, 2007). Most honey bee losses from 1966-1979 were attributable to organochlorine, organophosphorus, carbamate, and pyrethroid pesticide exposure. Efforts to restrict pesticide application during bloom provided some relief; however, the residual activity of some pesticides was never effectively addressed. Colony losses were especially severe from 1981 to 2005 with a drop from 4.2 million to 2.4 million, although some of the decrease is attributable to changes in how colony numbers were estimated. The introduction of parasitic honey bee mites, Acarapis woodi (1984) and Varroa destructor (1987), contributed to dramatic bee losses. At the same time, the control of crop pests in USA agriculture was rapidly changing. Genetically engineered (GE) crops were developed and extensively deployed, and two new classes of systemic pesticides, neonicotinoids and phenylpyrazoles, replaced many of the older pesticides. The rapid development and deployment of these two new insect control techniques distinguish USA agriculture from other regions of the world. In Europe a more cautious approach to the adoption of new agricultural practices has been taken.

GE Plant varieties: That have herbicide tolerance or insecticidal properties were first introduced into the USA in 1996. Soybeans and cotton are genetically engineered with herbicide-tolerant traits and have been the most widely and rapidly adopted GE crops in the USA, followed by insect-resistant cotton and corn. In 2007 these GE crops were planted on more than 113 million hectares worldwide, and the United States leads the world in acres planted with GE crops with most of the plantings on large farms (Lemaux, 2008). Insect resistance is conferred by incorporating genes coding for insecticidal proteins produced by Bacillus thuringensis (Bt), a common soil bacterium. While Bt can also be delivered by spray application, GE plants benefit from continuous production of Bt toxins. Bt endotoxins are activated in the insect gut where they form pores that allow gut contents to leak out of the lumen leading to the death of the insect. To date, Bt genes have been incorporated into corn (Zea mays), cotton (Gossypium hirsutum), potato (Solanum tuberosum) and tomato (Lycopersicon esculentum), and GE seeds of these crops are available to producers. Precommercial field tests of 30 different plant species with Bt genes were conducted in 2008 including apples, cranberries, grapes, peanuts, poplar, rice, soybeans, sunflowers and walnuts (ISB, 2007).

Numerous studies have been conducted to determine the impact of GE crops on honey bees (Lemaux, 2008). Canadian scientists found no evidence that Bt sweet corn affected honey bee mortality. Studies conducted in France found that feeding Cry1ab protein in syrup did not affect honey bee colonies. Likewise, exposing honey bees colonies to food containing Cry3b at concentrations 1000 times that found in pollen resulted in no effect on larval or pupal weights. Feeding honey bees pollen from Cry1ab maize did not

affect larval survival, gut flora, or hypopharyngeal gland development. A 2008 analysis of 25 independent studies concluded that the Bt proteins used in GE crops to control lepidopteran and coleopteran pests do not negatively impact the survival of larval or adult honey bees (Duan et al., 2008).

There is no evidence that the switch to Bt crops has injured honey bee colonies. To the contrary, it has benefited beekeeping by reducing the frequency of pesticide applications on crops protected by Bt, especially corn and cotton. On the other hand, the switch to GE crops with herbicide resistance has eliminated many blooming plants from field borders and irrigation ditches, as well as from the crop fields themselves. The reduction in floral diversity and abundance that has occurred due to the application of Round-UP® Herbicide (glyphosate) to GE crops with herbicide resistance is difficult to quantify. However, there is a growing body of evidence that poor nutrition is a factor in honey bee health. Eischen and Graham (2008) demonstrated that well-nourished honey bees are less susceptible to Nosema ceranae than poorly nourished bees. The adoption of agricultural practices that provide greater pollen diversity has been advocated, including the cultivation of small areas of other crops near monocultures or permitting weedy areas to grow along the edges of fields (Schmidt et al., 1995).

Neonicotinoid and phenylpyrazole pesticides: Another major shift in agriculture has been the development and extensive deployment of neonicotinoid and phenylpyrazole pesticides. These pesticides are extensively used in the USA on field, vegetable, turf, and ornamental crops, some of which are pollinated by bees. They can be applied as seed treatments, soil treatments and directly to plant foliage. Neonicotinoids cause persistent activation of cholinergic receptors which leads to hyperexcitation and death. One neonicotinoid, imidacloprid, was applied to 788,254 acres in California in 2005, making it the 6th most commonly used insecticide in a state that grows many bee-pollinated crops. The phenylpyrazoles, including fipronil, bind to .-amino butyric acid (GABA)-gated chloride ion channels and block their activation by endogenous GABA, leading to hyperexcitation and death.

Neonicotinoid and phenylpyrazole insec-ticides differ from classic insecticides in that they become systemic in the plant, and can be detected in pollen and nectar throughout the blooming period. As a consequence, bees can experience chronic exposure to them over long periods of time. While some studies have shown no negative effects from seed-treated crops, acute mortality was the only response measured. Desneux and colleagues (2007) reviewed methods that could be used to more accurately assess the risk of neonicotinoid and phenylpyrazole insecticides including a test on honey bee larvae reared in vitro, test for larval effects, a proboscis extension response assay to access associative learning disruption, various behavioral effects, and chronic exposure toxicity beyond a single acute dose exposure. Pesticide exposure may also interact with pathogens to harm honey bee health. Honey bees that were both treated with imidacoprid and fed Nosema spp. spores suffered reduced longevity and reduced glucose oxidase activity (Alaux et al., 2010).

Registration procedures and risk assessment: In the USA risk assessment related to agrochemical use and registration follow specific guidelines mandated by the Federal Insecticide Fungicide and Rodenticide Act. Despite the importance of honey bees, the effect of pesticide exposure on colony health has not been systematically monitored, and the Environmental Protection Agency (EPA) does not require data on sublethal effects for pesticide registration.

For many years, the standard laboratory method for assessing pesticide risk was to determine the median lethal dose (LD50) of the pest insect. In a second step, the effects of pesticides on beneficial arthropods were examined by running LD50 tests on the beneficial species to identify products with the lowest non target activity. In the USA this protocol remains the primary basis for risk assessment in pesticide registration. However, this approach to risk assessment only takes into account the survival of adult honey bees exposed to pesticides over a relatively short time frame. In Europe, when the standard procedures do not provide clear conclusions on the harmlessness of a pesticide, additional studies are recommended; however, no specific protocols are established. Acute toxicity tests on adult honey bees may be particularly ill-suited for the testing of systemic pesticides because of the frequency of exposure bees are likely to experience in field applications. Chronic feeding tests using whole colonies may provide a better way to quantify the effects of systemics.

Registration review is replacing the EPA's pesticide re-registration and tolerance reassessment programs. Unlike earlier review programs, registration review operates continuously, encompassing all registered pesticides. The registration review docket for imidacloprid opened in December 2008. To better ensure a "level playing field" for the neonicotinoid class as a whole and to best take advantage of new research as it becomes available, the EPA has moved the docket openings for the remaining neonicotinoids on the registration review schedule (acetamiprid, clothianidin, dinotefuran, thiacloprid, and thiamethoxam) to fiscal year 2012. The EPA's registration review document states that "some uncertainties have been identified since their initial registration regarding the potential environmental fate and effects of neonicotinoid pesticides, particularly as they relate to pollinators (EPA, 2009)."

Studies conducted in Europe in the late 1990's have suggested that neonicotinoid residues can accumulate in pollen and nectar of treated plants and represent a potential risk to honey bees. Recently published data from studies conducted in Europe support concerns regarding the persistence of neonicotinoids. While the translocation of neonicotinoids into pollen and nectar of treated plants has been demonstrated, the potential effect that levels of neonicotinoids found in pollen and nectar can have on bees remains less clear. Giro-lami and colleagues (2009) report high levels of neonicotinoids from coated seeds in leaf guttation water and high mortality in bees that consume it. While the frequency of guttation drop collection by bees under field conditions is not documented, the authors describe the prolonged availability of high concentrations of neonicotinoids in guttation water as "a threatening scenario that does not comply with an ecologically acceptable situation." The pending EPA review will consider the potential effects of the neonicotinoids on honey bees and other pollinating insects, evaluating both acute risk at the time of application and the longer-term exposure to translocated neonicotinoids (EPA, 2009).

The use of newer systemic pesticides, including the neonicotinoids (e.g. imidacloprid) and phenylpyrazoles (e.g. fipronil), has become prevalent in the USA. As systemics, these pesticides are present in all plant tissues, including the nectar, pollen and other plant exudates. Honey bees' exposure to these compounds is very different from that of traditional pesticides, where acute toxicity was a primary concern. Instead, honey bees at all stages of development may be chroni-cally exposed to sublethal doses of these compounds. The consequences of this new mode of exposure have not been extensively considered in regard to pesticide regulation in the USA, although the EPA is currently reviewing the status of these compounds. Beekeepers should watch these deliberations closely. Restricting new compounds may result in a reversion to older chemistries that clearly harm bees. Beekeepers should weigh the evidence and the risks carefully before taking a position.

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A detailed review of the literature on Pesticides and Honey Bee Toxicity by R. Johnson, M. Ellis, C. Mullin and M. Fraizer can be found in the May 2010 Special Issue of Apidologie on Honey Bee Health. Please see Johnson, R.M., M.D. Ellis, C. Mullin, M. Frazier. 2010. Pesticides and honey bee toxicity - USA. Invited review. Apidologie. DOI: 10.1051/apdio/2110018. Download this article under "Publications" at the above link or go to the direct .pdf download.

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NEONICOTINOIDS in LAYMAN'S TERMS

Neonicotinoids are a neurotoxin and are classed as systemic. Systemic means the active ingredient is found in all parts of the plant. Eg a seed is coated in a neonicotinoid insecticide and as the plant grows the leaf tissue, sap, pollen, nectar and the fruit/seed all

Neonicotinoid and phenylpyrazole pesticides: Contain the active ingredient (a neurotoxin). From a beekeepers perspective the active ingredient (acetamiprid, clothianidin, dinotefuran, imidacloprid, nitenpyram, thiacloprid and thiamethoxam) is at its highest concentration level in the plant at time of flowering.

Any insect larvae being fed nectar and pollen containing the neurotoxin will most likely die or have their immune system severely weakened. Research has shown that neonicotinoids at 3ppb can have a serious effect on young honeybees. 3ppb is far less than one teaspoon of chemical in an olympic size swimming pool.

Neonicotinoids are non selective. ie they effect the beneficial insects as well as the bad insects. There have been reports of insect

eating birds and bats having serious problems – linked to neonicotinoids which lowers their immune systems making the birds and bats much more susceptible to viruses and fungi.

The active ingredient does translocate off the seed and into the soil. This ingredient is mobile and can then move with water. Bayer have highlighted that imidacloprid should not be used where water lays or flows due to this trait. Neonicotinoids kill aquatic biota and insects. Neonicotinoids are thought to be the cause of the major fish kills at Bourke and Lake Cargelligo during the 2011 floods.

A crop planted (not seed coated) the following year in a paddock that was planted with a neonicotinoid seed coating the previous year can take up this residual neonicotinoid and contain the active ingredient in all parts of the plant. Neonicotinoids also kill soil microbes which provides a range of problems for farmers.

NOTES ON SOME CHEMICALS

Regent (phenylpyrazole pesticide) will kill bees for 28 days as a knock down – systemic activity can last for a few months – soil residual about 7 months. Should not be used on a flowering crop due to its systemic activity.

Shield (neonicotinoid pesticide) clothiandin was conditionally registered in USA in 2003 – too toxic to use on a flowering crop long residual, a very strong systemic chemical.

Canopy Oil – increases toxicity of pesticide mixture to bees, on its own still has a low toxicity to bees.
Agrimec (18g/L ABAMECTIN). Highly toxic do not spray any plants in flower (very dangerous to bees)

Dimethoate – very toxic to bees. 75 hour knock down with a very strong systemic activity for 3 weeks.

Synthetic Pyrethroids (various) Residual effect on bees varies from a few hours to several days, e.g. tau-fluvalinate used overseas in mite treatment of beehives at low levels – safe to use but still apply at sunset only in flowering crops

Permethrin – 1-2 days softened by repellency – long residual soil life
Cypermethrin – less 2 hours up to 10 hrs residual. Spray at sunset only
Esfenvalerate- 6 hours softened by repellency under arid conditions.

Pirimor (pirimicarb) less than 2 hours. Can be sprayed when bees are not foraging. Still spray at sunset for best results.

NOTES ON CHEMICALS FROM USA/CANADIAN BEE CONFERENCE ORLANDO 2009

Gaucho at 4 parts per billion (PPB) shows effects on bees.
Main three chemicals found in pollen samples were:
Fluvalinate
Coumaphos
Chlorothalomil (Fungicide)

121 different chemicals were found in pollen samples. Average was 6.7 pesticides per pollen sample. Pyrethroids dominated the samples.

RESEARCHING CHEMICALS ON THE APVMA WEBSITE.

The APVMA website at www.apvma.gov.au where you can search the **PUBCRIS** database for registered products, (see **PUBCRIS** in top RH corner of page – *under Popular Pages and Searches)*. You can look at products where it says 'view labels' or www.apvma.gov.au/permits/permits.shtml where you can search for Permits. Basically if you know what the grower is intending to spray you can search the APVMA website and see the label (which should mention bee toxicity) and other information for that chemical.
Here is the link to the label for Regent, http://services.apvma.gov.au/PubcrisWebClient/label/60284.pdf
The following three pages are a printout that shows what products have Fipronil in them. Many are for termite and dog insect control.
The fourth page is a list of current Permits for Endosulfan. Select CURRENT in STATUS and type in endosulfan as the ACTIVE NAME.

Export List **New Search**

Active Constituent Contains FIPRONIL

66 Products Found

Product List

Approval No	Product Type	Product Name	Active(s)	Details
46789	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
46793	INSECTICIDE	REGENT 200SC INSECTICIDE	FIPRONIL	Single Page
46828	PARASITICIDES	FRONTLINE SPRAY	FIPRONIL	Single Page
47407	INSECTICIDE	REGENT 800WG INSECTICIDE	FIPRONIL	Single Page
48523	PARASITICIDES	FRONTLINE TOP SPOT CAT	FIPRONIL	Single Page
48606	PARASITICIDES	FRONTLINE TOP SPOT SMALL DOG	FIPRONIL	Single Page
49120	ACTIVE CONSTITUENT	FIPRONIL MANUFACTURING CONCENTRATE	FIPRONIL	Single Page
49434	INSECTICIDE	COSMOS INSECTICIDAL SEED TREATMENT	FIPRONIL	Single Page
49646	HOUSEHOLD INSECTICIDE	GOLIATH COCKROACH BAIT	FIPRONIL	Single Page
49647	HOUSEHOLD INSECTICIDE	GOLIATH COCKROACH GEL	FIPRONIL	Single Page View Label
49825	PARASITICIDES	FRONTLINE TOP SPOT MEDIUM DOG	FIPRONIL	Single Page
49826	PARASITICIDES	FRONTLINE TOP SPOT LARGE DOG	FIPRONIL	Single Page
50285	INSECTICIDE	ADONIS 8.5UL INSECTICIDE	FIPRONIL	Single Page
51304	PARASITICIDES	STARTGARD FOR PUPPIES	FIPRONIL	Single Page
51530	PARASITICIDES	STARTGARD FOR KITTENS	FIPRONIL	Single Page
51720	HOUSEHOLD INSECTICIDE	COMBAT ANT - RID RELIEF FROM TOUGH ANT PROBLEMS ANT BAITS	FIPRONIL	Single Page View Label
51985	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
52043	PARASITICIDES	FRONTLINE TOP SPOT EXTRA LARGE DOG	FIPRONIL	Single Page
52327	PARASITICIDES	FRONTLINE TOP SPOT FOR DOGS	FIPRONIL	Single Page
52547	ACTIVE CONSTITUENT	FIPRONIL MANUFACTURING CONCENTRATE	FIPRONIL	Single Page
53156	INSECTICIDE	ADONIS 3UL INSECTICIDE	FIPRONIL	Single Page
54523	PARASITICIDES	FRONTLINE PLUS (FIPRONIL PLUS (S)-METHOPRENE) FOR DOGS	FIPRONIL	Single Page
54524	PARASITICIDES	FRONTLINE PLUS (FIPRONIL PLUS (S)-METHOPRENE) FOR CATS	FIPRONIL	Single Page
54624	INSECTICIDE	TERMIDOR RESIDUAL TERMITICIDE AND INSECTICIDE	FIPRONIL	Single Page View Label

55553	INSECTICIDE	MAXFORCE GOLD GEL INSECTICIDE	FIPRONIL	Single Page View Label
56123	PARASITICIDES	STARTGARD PLUS FOR PUPPIES	FIPRONIL	Single Page
56124	PARASITICIDES	STARTGARD PLUS FOR KITTENS	FIPRONIL	Single Page
57764	INSECTICIDE	IMPEDE INSECTICIDE	FIPRONIL	Single Page
58418	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
58478	INSECTICIDE	AMULET CUE LURE FRUIT FLY STATIONS	FIPRONIL	Single Page
58661	VERTEBRATE POISON	MORTEIN RAT KILL WITH FLEA ELIMINATOR	FIPRONIL	Single Page
58884	INSECTICIDE	NUFARM IMPEDE INSECTICIDE	FIPRONIL	Single Page View Label
58885	INSECTICIDE	NUFARM ADONIS 3UL INSECTICIDE	FIPRONIL	Single Page View Label
59286	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
60284	INSECTICIDE	NUFARM REGENT 200SC INSECTICIDE	FIPRONIL	Single Page View Label
60654	INSECTICIDE	TERMIDOR DUST TERMITICIDE	FIPRONIL	Single Page
60664	INSECTICIDE	CROP CARE AMULET CUE-LURE FRUIT FLY STATIONS	FIPRONIL	Single Page View Label
60887	PARASITICIDES	ILIUM FRONTERA SPRAY	FIPRONIL	Single Page View Label
61345	INSECTICIDE	CROP CARE COSMOS INSECTICIDAL SEED TREATMENT	FIPRONIL	Single Page View Label
61632	INSECTICIDE	NUFARM GARD INSECTICIDE	FIPRONIL	Single Page View Label
61820	INSECTICIDE	IMTRADE REGAL 800 WG INSECTICIDE	FIPRONIL	Single Page View Label
62236	INSECTICIDE	LEGION 200SC INSECTICIDE	FIPRONIL	Single Page
63004	WOOD PRESERVATIVE	WOLSIT T-35	FIPRONIL	Single Page
63161	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
63435	INSECTICIDE	BARMAC FIPRO FORCE RESIDUAL TERMITICIDE	FIPRONIL	Single Page View Label
63581	INSECTICIDE	SUREFIRE VISTA 200SC INSECTICIDE	FIPRONIL	Single Page View Label
63600	INSECTICIDE	TRANSFER TERMITICIDE	FIPRONIL	Single Page
63789	INSECTICIDE	FIPFORCE AQUA TERMITICIDE	FIPRONIL	Single Page
63885	VERTEBRATE POISON	MORTEIN RAT KILL THROWPACKS HOUSEHOLD PROTECTION	FIPRONIL	Single Page
63960	INSECTICIDE	CAMPBELL KAISER 200SC INSECTICIDE	FIPRONIL	Single Page
64070	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page

64449	INSECTICIDE	ULTRATHOR WATER BASED TERMITICIDE	FIPRONIL	Single Page
64725	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
64884	INSECTICIDE	COUNTRY FIPRONIL RESIDUAL TERMITICIDE	FIPRONIL	Single Page
65337	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
65338	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
65350	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
65356	INSECTICIDE	AW FLAK INSECTICIDE	FIPRONIL	Single Page
65457	PARASITICIDES	FRONTLINE ORIGINAL FOR CATS	FIPRONIL	Single Page
65572	HOUSEHOLD INSECTICIDE	BLATTATHOR ULTRA GEL COCKROACH BAIT	FIPRONIL	Single Page
65655	PARASITICIDES	FRONTLINE ORIGINAL FOR LARGE DOGS	FIPRONIL	Single Page
65660	PARASITICIDES	FRONTLINE ORIGINAL FOR MEDIUM DOGS	FIPRONIL	Single Page
65661	PARASITICIDES	FRONTLINE ORIGINAL FOR SMALL DOGS	FIPRONIL	Single Page
65663	PARASITICIDES	FRONTLINE ORIGINAL FOR EXTRA LARGE DOGS	FIPRONIL	Single Page
65799	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page
65927	ACTIVE CONSTITUENT	FIPRONIL	FIPRONIL	Single Page

Permit ID	Type	Description	Status	Date Issued	Expiry Date
PER9343	AG	Various Pesticides / Mustard / Multiple Pests	CURRENT	02-Mar-07	03-Mar-12
PER10047	AG	Various products / Export	CURRENT	16-Aug-07	16-Aug-12
PER10229	AG	Various herbicides, insecticides & fungicides / Carrot, Onion & Brassica seed crops	CURRENT	28-Nov-07	31-Dec-12
PER11977	AG	Endosulfan / Sunflower and Sorghum Seed Crops / Rutherglen bugs	CURRENT	10-Feb-10	30-Jun-15
PER12075	AG	Carbaryl & Endosulfan (various brands)/ Mango, Mangifera Indica/ Mango Leafhoppers, Idioscopus Clypealis and I. Nitidulus.	CURRENT	18-Jun-10	30-Jun-12
PER12521	AG	Farmoz Endosulfan 350EC Insecticide / Product formulation	CURRENT	20-Oct-10	12-Oct-12
PER12522	AG	Nufarm Endosulfan 350 EC Insecticide / product formualtion	CURRENT	20-Oct-10	12-Oct-12
PER12684	AG	Endosulfan / SunflowerSeed Crops / Rutherglen bug	CURRENT	07-Jun-11	12-Oct-12

EFFECT OF FUNGICIDES ON BEES

In January of 2010 I went to the USA/Canada Beekeepers conference held in Orlando Florida. There were many interesting speakers there. A lot of the speakers were presenting research papers from USA, Canada and Europe.

As a pollinator of almonds and apples one session I found most interesting was the effects of fungicides on bees. Research has found there are 13 identified fungi in bee bread. This fungi ends being up being fed to larvae.

Basically bee bread is full of mycoflora. At least one fungi in bee bread outcompetes chalkbrood fungi. However this anti chalkbrood fungi is the one most susceptible to fungicides.

There is minimal fungi in bee bread where the bee bread is made from fungicide sprayed pollen.

Editors Note: *This explains why I have a high incidence of chalkbrood when I check my hives after apple pollination. Fungicides are routinely sprayed while the bees are in the apple orchard.*

Stephen Targett
CPA Secretary

2012 AGM & Conference
Location:
Shepparton RSL
Date:
17 July 2012

In the Autumn 2012 Newsletter

Yellow Bees versus Black Bees for Pollination

Which bees pollinate better in cooler weather. Research has been undertaken and hopefully we will have a full report for our next newsletter.

2011 Almond Pollination Update

More on Chemicals

2012 AGM Speaker List

TALKING POINT

Cost of Pollination: How do you work out what you and your bees are worth on a per hive basis?

Are they there for the benefit of the farmer – i.e. minimal or no charge? ***OR*** Do you regard pollination as a professional service such as those provided by plumbers, mechanics, electricians etc? Are you – the beekeeper (a professional) entitled to be paid for your knowledge, labour, time and workforce (bees) that you provide when pollinating crops? How much are you – the professional -worth? You should believe that you are worth a profitable income/wage – not just covering costs or worse case **losing** money. Think about and work out what you are ***REALLY*** worth in dollar terms. If you are not making a profit on pollination maybe you need to reassess you fees charged. If you do not look out for yourself no one else will.

Pensioner pollinates apples: This year we again provided bees for pollination of apples.

We used a slightly different method – we placed a pallet of bees (4 hives) on a trailer built to hold fruit bins, and these trailers were then towed to the headlands of the rows of apple trees, taking particular care to slope hive entrances down so no water could enter hives.
We also placed single hives in the centre of the rows. No difference was noted in the strength of the front hives to the rear ones.
A small amount of honey was consumed. The bees are under stress as it is generally quite cold and they have to fly under the hail nets. A week or so after the pollination job you would not know the hives had been under stress..
To take bees to apples without first finding good breeding conditions would be very silly. This orchard has 350 ha of apples under nets. We use 390 hives. Our return is $$$$ per hive. The apple grower is very happy with pollination results.

JOHN BENFIELD

CROP POLLINATION ASSOCIATION Inc.

ABN: 69 335 882

Application to Become or to Renew Membership
of the Crop Pollination Association Inc.
2011/2012

Name:
……

Postal Address:

……

City/town:…….. State: ……Post Code:……

Telephone: ……Facs: ……Mobile:……....

Email Address: ……...

Annual Membership Fee. $50 – NO GST

Forward completed form to:- CPA Secretary
PO Box 325, Narrandera NSW 2700
Telephone: 0428 649 321

Please indicate areas where you are prepared to travel to, to undertake pollination contracts

……

……

Please state whether the Crop Pollination Association can give your name and contact details to growers who require pollination hives.

YES NO

Please state if you agree to have your details published on the CPA Website.

YES NO