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CONCERN OVER IMIDACLOPRID - SYSTEMIC INSECTICIDE USED ON 1.4 Million Acres of Oilseed Rape and other crops in the U.K.

Dear Beekeepers

I am writing to alert you to the issue of the widespread use of a new systemic insecticide called Imidacloprid which has been banned throughout France since 2000A.D. as a result of the loss of hundreds of thousands of bee-colonies in the period from 1997 - 2004 and a dramatic drop in honey harvests there. Imidacloprid is used as a seed-dressing on virtually every acre of oilseed rape in the UK as well as on sugar beet; winter wheat, winter barley and winter oats; forestry plantations, plant nurseries and in garden centres.

Dr Miles Thomas of the Central Science Laboratory reports that Imidacloprid was used on over 1.4 million acres of crops in the UK in 2004. The chemical is a systemic insecticide and specifically attacks the nervous system; as a neuro-toxin it has a lethal effect on bees at just 5-10 part per billion in nectar and pollen. However, one independent French study found it had sub-lethal behavioural effects on bees at just 0.1 ppb - a dosage of 50-100 times less than the lethal effect.

The pesticide is dusted onto the seeds of oilseed rape and other crops but it migrates throughout the growing plant and perfuses: sap, leaves, nectar and pollen, fruit or grain. Imidacloprid is neuro-toxic - it attacks the nervous system of all invertebrates: worms, insects, bees, butterflies, ladybirds etc. It also poisons birds. The 'target' species are aphids, flea beetles and any soil invertebrates which attack seeds and roots. However, Imidacloprid also kills non-target-species including bees, earthworms, woodlice, caterpillars, moths, beetles – and as a result it destroys the base of the 'food pyramid' on any arable farm – leaving moles, hedgehogs, shrews and birds to starve – or migrate away from the sterilised habitat.

ACUTELY TOXIC TO BEES

Imidacloprid is lethal to bees at a staggeringly low level of contamination: the manufacturer Bayer originally claimed that the pesticide only killed bees at levels of 50,000 nanogrammes per kg, but later independent studies confirmed that it kills bees outright at levels of just 10 nanogrammes per kilo (10 parts per billion).

This is equivalent to 1 cc - or a single teaspoon of poison – dissolved in 1000 metric tonnes of water – an average Olympic swimming pool.

However, independent French research - see below - reports that, since it attacks the nervous system, it does not need to kill bees outright in order to

affect a colony; it incapacitates the bees long before it kills them, rendering them unable to fly, navigate, mate etc.

Imidacloprid has been shown to be present in the nectar and pollen of treated oilseed rape flowers at levels from 3-7 nanogrammes per kg (ppb). Dr Bonmatin reports that at just 0.1 nanogrammes per kg there were pronounced sub-lethal effects on foraging bees including: inability to navigate or forage properly. Long before it kills bees, Imidacloprid affects complex behaviours like flight, navigation, vision, smell etc, and crucially in the case of queens - mating and orientation flights.

EFFECTS OF BIO-CONCENTRATION

If bees are collecting nectar and pollen that is contaminated with Imidacloprid at just 3 to 5 parts per billion (ppb) there will be a bio-concentration effect as nectar is evaporated and concentrated into honey, or mixed with pollen to feed larvae. The initial poisoning of foraging bees may be sub-lethal; however, once Imidacloprid is introduced into the hive and concentrated, by a factor of 3 - 4 times volume, as honey, it may then be fed to larvae over a period of a week of their growth stage, so the dosage which the larva accumulates will progressively rise. Similarly, worker bees will feed the queen with contaminated honey over a prolonged period and she could be receiving a dose which, although not acutely lethal, would progressively damage her nervous system as the poison accumulates.

This could explain why some UK beekeepers have experienced unusual queen losses in 2005: failure to mate, failure to return from mating flights, supercedure of young queens in their first season, abnormal egg laying patterns, drone laying young queens, death of brood in the cells. Separating such effects from the additional impact of virus disease caused by varroa would be very difficult.

HIGH PERSISTENCE OF PESTICIDE IN THE SOIL

Imidacloprid is highly persistent in the soil once it has been used on a field. The International Bee Research Project (see below) found that two years after Imidacloprid was last-used in a field of oilseed rape, the pollen and nectar of the new rape crop was still contaminated with the chemical at a level that has been shown to affect bees. Similarly, it is highly persistent in water and is equally lethal to aquatic vertebrates, invertebrates and insects including: dragonflies, water fleas, water beetles etc. Could this be affecting farm ditches and freshwater ponds in arable crop areas? It seems likely that, since it affects insectivorous birds, it would also affect insect-eating frogs, newts, toads etc.

VANISHING BIRDS AND MAMMALS ?

Since it attacks all animal nervous-systems, Imidacloprid and its related poisons like Fipronil and Clothianidin, kill 100% of all earthworms and soil invertebrates in any treated field: beetles, crane-fly larvae, slugs, snails – all are killed. Many animals like hedgehogs and shrews feed on insects and many more bird species depend on insects and larvae to feed their young. Since virtually all arable crop land in the UK is now saturated with Imidacloprid, is it surprising that we are seeing a decline in farmland birds?

CREATION OF AN ECOLOGICAL DESERT

Given Imidacloprid's long-persistence in the soil any treated field remains ecologically sterile for several years after treatment. Logically this could be a major causative factor in the catastrophic decline of farmland birds and especially insectivores which has been noted by BTO and RSPB. Over 1.4 million acres of UK arable crops were treated with this systemic, highly persistent nerve poison in 2004. In addition, most of these same crops of oilseed rape, wheat, barley, potatoes, peas and beans will also have been pre-treated with Glyphosate weedkiller – to eradicate all wildflowers and plants. So wildlife is being hit from two sides at the same time: all insect food is being killed-off and all wildflowers eradicated.

This means that virtually the entire UK arable cropland area is well on the way to becoming an ecological desert.

BANNED IN FRANCE AND GERMANY BUT ALLOWED IN THE UK

In the period 1997-2000, French beekeepers and bee-farmers experienced massive colony losses (hundreds of thousands of bee-hives) and a dramatic collapse in honey-harvest in areas where Imidacloprid was first used on sunflowers and oilseed rape. These losses were progressive and geographically linked to the introduction of the pesticide. In areas where it was not used there were far fewer colony losses and the honey harvest was normal; in areas where the pesticide was introduced for the first time, the bee-losses were coincident in time and place. As a result of massive protests from the French beekeepers, backed by well-researched studies from a number of regional and national science institutes, the French government banned the chemical in 2000. However, distributors and farmers were allowed to 'use up existing stocks' until 2004, so the current year's honey harvest is the first which has been largely free of Imidacloprid. One can assume that Bayer has been lobbying intensively for removal of the ban - given that £400 million sales are at stake in Europe if the ban continues; undoubtedly they will have backed up their lobbying with strong scientific studies claiming the chemical is harmless. However, the French government has so far refused to rescind the ban, which should give us food for thought here in the UK.

UPDATE: In May 2008 there was a massive die-off of bee colonies in the German Rhineland area centred on Bayen Wurrtemberg. Tens of thousands of hives were lost in less than two weeks due to the misapplication of another neo-nicotinoid pesticide – a systemic nerve-poison called Clothianidin. After urgent laboratory investigations of dead bees collected from 30 separate incident sites the Federal government banned Imidacloprid, Fipronil and Clothianidin – as well as 5 other Bayer products.

Imidacloprid is produced by Bayer Crop Sciences and total world sales of the chemical in 2004 were valued at 600,000,000 Euros. It is marketed in the UK under 160 different trade names including:

* 'Chinook' for seed dressing of oil-seed rape seed. * 'Gaucho and Montur' for seed dressing of sugar beet seed. * 'Prestige' for dressing of potato seed before planting. * 'Confidor' for treatment through irrigation water in greenhouses (ornamental plants, tomatoes, cucumber and sweet pepper). * 'Merit Forest' for treatment of forest plants against insect attacks.

My concerns are threefold:

1. EFFECT ON BEES

As a beekeeper I am concerned that we are beginning to see evidence of unusual collapses of bee colonies in the UK which mirrors, on a smaller scale, those experienced by French beekeepers in the period 1997-2004. The French government ban on the use of Imidacloprid was agreed in 2000 but only became effective in 2004. The latest reports are that colony recovery and honey harvest in France was abrupt and distinct in 2004-2005 after the complete ban on Imidacloprid. More studies are underway.

2. ECOLOGICAL DISASTER

As a conservationist I am concerned that the large-scale use of this highly toxic, systemic and persistent insecticide in the UK is effectively sterilising fields of all soil-invertebrate life including: earthworms, beetles, ladybirds, butterflies, moths etc. This has profound ecological implications, especially for insectivorous birds and mammals.

3. POTENTIAL EFFECT ON HUMAN FOOD SUPPLY & HEALTH

Imidacloprid is highly persistent in the environment and is absorbed into all parts of the crop-plant: pollen, nectar and seeds. If collected by bees it is progressively concentrated in honey as the nectar is evaporated. It seems likely that it will be present in sunflower and rape-seed oil, - even if in small quantities. As a neuro-toxin this may have implications for the food chain and human health.

Banned in France & Germany – Still Approved in the UK?

I became aware of Imidacloprid due to articles about massive loss of bee colonies in France, Switzerland, Sweden and Canada. I append a number of articles from government agencies, bee -research laboratories and other sources in those countries. Beekeeping is a very large and influential industry in France and concern at the economic loss from colony-deaths was very widespread. Large demonstrations were held in Paris and intense lobbying went on. The outcome was that the use of Imidacloprid as a seed-dressing for sunflowers, oilseed rape and potatoes was banned in France and it remains so.

Situation in the UK

When I consulted the UK Pesticides Safety Directorate online database I discovered that 'Imidacloprid' is the dominant seed-treatment for oilseed rape, marketed under the trade name 'CHINOOK' in the UK or 'GAUCHO' in France. It is also the main see-treatment for sugar beet, winter wheat, winter barley and winter oats. The obvious question is: why does a pesticide that has been banned throughout France continue to be approved for very wide scale use across the UK?

Moreover, why does BBKA Enterprises persist in accepting significant funding from the manufacturers of Imidacloprid? They do not endorse this specific pesticide but they do endorse other pesticides by the same manufacturer as being "bee friendly". In my view this is completely unethical and wrong as a matter of principle - it also places BBKA in an extremely invidious and vulnerable position. Once an organisation has pocketed cash from a pesticide manufacturer for endorsing one product, it would be extremely difficult to publicly oppose another far more dangerous product - as is evident from the continuing silence on this issue from BBKA."

IMPACT IN THE UK: 20% LOSS OF BEEHIVES IN 2007 WINTER

Currently there is growing concern in the UK about the unexpected collapse of bee colonies in summer (a time when they normally thrive) and a sporadic incidence of failure of queen bees to mate or prosper. The Bee Inspectorate has just reported an average loss of roughly 20% of all UK hives in the winter of 2007. Many beekeepers have reported 30 -50% losses and some have lost every single hive they owned.

As yet the evidence is sporadic and a national survey/ study is urgently needed but if the pattern follows that observed in Sweden, France and Canada, it seems a reasonable hypothesis that Imidacloprid and its fellow Neo-Nicotinoid poisons may be a causal factor.

Sincerely,
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A LIST OF RESOURCES ON IMIDACLOPRID

Bee Diary Blog

A wide range of articles and photos on current bee issues:

<http://beediary.wordpress.com/>

‘Last Flight of the Honeybee’ – Guardian May 31st 2008-06-02

<http://www.guardian.co.uk/environment/2008/may/31/animalwelfare.environment>

“Germany Bans Chemical Linked to Honeybee Devastation”

<http://www.guardian.co.uk/environment/2008/may/23/wildlife.endangeredspecies>

“So What is Plan Bee?” – Observer Article May 25th 2008-06-02

<http://www.guardian.co.uk/environment/2008/may/25/conservation.wildlife>

Durham Beekeepers Objection to BBKA Endorsement of Pesticides for Cash

<http://beediary.wordpress.com/>

BAYER Uses BBKA Name and Logo in its marketing to Sell Pesticides

<http://beediary.wordpress.com/2008/05/23/bayer-uses-bbka-endorsement-to-sell-pesticides/>