AGCARM

Healthy crops : Healthy animals : Healthy business

Fact Sheet On Neonicotinoids

June 2013

The following Q & A is about neonicotinoids, their use in New Zealand, and the EU decision to impose restrictions on the insecticide.

What are neonicotinoids?

Neonicotinoids (neonics) are a group of modern insecticides noted for their excellent insect control but low toxicity in humans and other mammals. Neonics are systemic and, when applied to the seed or the roots (as a soil drench), protect the plant from insect attack. There are several neonic insecticides which can be used as foliar sprays, but their use is limited.

Neonics have been on the market in New Zealand for more than 20 years and been applied to protect many hundreds of thousands of hectares of crops and pasture.

What are the trade names of the main neonics available in New Zealand and on what crops are they used?

Foliar use

- Actara (active ingredient: thiamethoxam) for kiwifruit, pipfruit and in-furrow application on potatoes.
- Calypso (active ingredient: thiacloprid) for avocados, kiwifruit, pipfruit and stonefruit.
- Confidor (active ingredient: imidacloprid) for application on onions and as transplant tray treatment of vegetable brassicas and lettuce.

Seed treatment application

- Cruiser (active ingredient: thiamethoxam) for maize/sweetcorn and forage brassicas.
- Gaucho (active ingredient: imidacloprid) for cereals, forage brassicas, grass seed, maize/sweetcorn, potatoes and winter squash/pumpkins.
- Poncho (active ingredient: clothianidin) for cereals, maize/sweetcorn, forage brassicas and grass seed.

This is not an exhaustive list of neonics available in New Zealand as there are a number of generic products based on some of the above active ingredients.

What are the benefits of using neonics?

Seed treatment application is highly targeted and is one of the most environmentally friendly means of crop protection product application. The seed treatment neonics have largely displaced older and less effective organophosphate insecticides which were more toxic to humans. Modern silage maize production in New Zealand would almost be impossible without neonics. One of the unique characteristics of neonics is that, when used as seed treatments, they can be applied at very low rates of active ingredient per hectare, reducing the number of insecticide applications in comparison to spray treatments.

The EU has imposed restrictions on some neonics, what are they?

The European Commission has imposed use restrictions on three neonicotinoid compounds (imidacloprid, clothianidin and thiamethoxam) for applications (seed treatment, granular, foliar) in cereals and bee-attractive crops, including sunflowers, oilseed rape, maize, and soybean, with the exception of foliar sprays in greenhouses and after flowering.

Restrictions were not placed on applications in winter cereals, sugar beet and potatoes.

Registrations of products for non-professional use (home and garden products) will be withdrawn.

The restrictions will apply from 1 December 2013, following a transition period from the date of withdrawal of authorisations on 30 September 2013. Wwithin two years, the Commission will review the conditions of approval of the three neonicotinoids to take into account relevant scientific and technical developments.

What is the basis of the EU Commission's decision?

The Commission based its recommendation on a series of reviews from the European Food Safety Authority (EFSA) published in January 2013. These concluded that there were knowledge gaps between the current regulatory approval packages for the use of neonics and possible questions arising which could lead to revised regulatory rules being needed in the future.

The report did not indicate whether the potential theoretical risks to bees should be deemed acceptable or not. Nor did these reports call for a ban on the compounds reviewed. Seed treatment and granular applications were the only methods covered by the reviews. Spray and drench application were not evaluated by EFSA.

What effect will the ban have on European agriculture?

The only significant impact assessment undertaken (www.neonicreport.com) suggests that the loss of neonics will result in higher production prices and lower yields. The need to control pests will still exist and farmers will have to apply more foliar sprays. With the loss of a valuable crop protection tool, the risk of pest resistance increases, forcing farmers to focus

on more profitable crops. As a consequence, crop diversity will reduce. A reduction in yields will lead to lower exports of food from Europe, and higher imports - increasing food insecurity at a time of rising food prices.

Is it true that neonics are contributing to declining bee population and bee health?

No. Some groups have claimed that neonics are responsible for Colony Collapse Disorder (CCD), reported in the United States, and severe winter colony losses in Europe. However independent scientific research has concluded that the varroa mite is the main cause, amongst others, for these losses.

In Australia, neonics have been used for around 20 years but, because it has no varroa, it is said to have the healthiest bees in the world.

In New Zealand neonics have been used since well before (Gaucho first registered and used in 1992) the varroa mite was first identified in 2000. Feral bee numbers have been decimated, but managed bee hive numbers have increased by 40 percent between 2005 and 2013.

Do neonic seed treatments pose a particular risk to bees?

The neonics used for seed treatment are intrinsically very toxic to honey bees. So it is important to keep bees away from neonics. However, neonics used as a seed treatment limits the routes of honey bee exposure.

There are only three potential routes of exposure to seed treatments:

1. Dust off during the drilling/planting process.
   This is managed by the use of film coats (stickers) which assist with adhesion of the seed treatment to the seed, reducing dust.

2. Systemic residues in pollen/nectar.
   Applied at labelled rates, neonic residues are either non-existent or well below the no observable adverse effect level.

3. Residues of neonics in guttation fluid.
   Although residue levels in guttation fluid may be toxic to bees, guttation and collection of guttation fluid by honey bees are very rare and therefore not considered as an unacceptable risk to bee colonies.

The media frequently refers to sub-lethal effects caused by neonics, what does this mean and is it important?

Sub-lethal effects are effects which do not directly cause mortality but which may impair normal functioning by affecting foraging activity, orientation and homing behaviour, etc. Some studies claim to have found sub-lethal effects. However most have been done in laboratory studies or using otherwise artificial design conditions, the relevance of which is questionable. When alleged effects have been tested under realistic field conditions, they could no longer be found as a factor posing any damage to bee colonies. For these reasons sub-lethal effects are not considered an important determinant on bee health.

What effect will the EU Commission ban on neonics have on their use in New Zealand?

There is no scientific basis to support a ban of neonicotinoids in New Zealand (or to justify the European decision).

The regulatory authority, the Environmental Protection Authority (EPA), operates under a robust science and evidence-based risk assessment system. On this basis, the European decision should have no influence on what happens in New Zealand.

Neonic products have been widely used in New Zealand for over 20 years and there is no evidence that they have any adverse impacts on the health of our bee populations.

Ends