



Media briefing

Entry into force of EU restrictions on the use of neonicotinoid insecticides imidacloprid, thiamethoxam and clothianidin

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Introduction

On 1 December 2013, the three neonicotinoid insecticides thiamethoxam (produced by Syngenta), imidacloprid and clothianidin (produced by Bayer), will be subject to a partial two-year ban in the European Union (EU). The insecticides are banned because of their proven harmful effects on bees.

Neonicotinoids are a relatively new class of insecticides derived from nicotine. Due to their high neurotoxicity for insects, neonicotinoids are extremely effective in controlling certain pests. Applied as foliar spray, granules or seed coating, neonicotinoids have become one of the most widespread insecticides used in agriculture. They are used on maize, fruit trees, potatoes and many other crops. Neonicotinoids have systemic properties, meaning that they are absorbed by the entire plant system, resulting in pesticide residues in all parts of growing plants, including pollen and nectar.

In January 2013, the European Food Safety Authority (EFSA) published three scientific opinions [1] on the risks posed by the three neonicotinoids. EFSA examined lethal as well as sub-lethal effects on honeybees. It concluded that the insecticides pose “high acute” risks for bees. In particular, EFSA identified highly acute risks to honeybees from exposure via dust, from consumption of residues in contaminated pollen and nectar and from exposure via guttation fluid¹ (in the case of maize).

Following EFSA’s conclusions, on 24 May 2013 the European Commission, supported by a large majority of EU countries, decided to partially ban these pesticides².

The EU ban

The Commission Implementing Regulation (EU) No 485/2013 [2] forbids the use of clothianidin, thiamethoxam and imidacloprid on crops attractive to honeybees. Among others, the Regulation forbids their use as seed treatment, soil treatment or foliar application for the following crops: maize, oilseed rape, soya, barley, millet, oats, rice, rye, sorghum and wheat. The entire list, which also includes ornamental plants and fruits, can be found in Annex I of the Regulation [2]. As of 1 December 2013, the marketing of seeds treated with the three neonicotinoids will also be banned.

¹ Guttation fluid is a watery liquid exuded by plants.

² <http://www.greenpeace.org/eu-unit/en/News/2013/Majority-of-EU-countries-support-partial-ban-of-bee-killing-pesticides/>

The Regulation also lists a number of exceptions. For instance, the ban does not apply to uses in closed systems such as greenhouses, nor to crops which are considered non-attractive to bees, such as cereals sown in winter. Another exception is that foliar treatments are allowed once the crop's flowering period is over. Non-professional use of the three insecticides is also prohibited.

The text of the Regulation stipulates that, within two years of its entry into force, the European Commission will initiate a review of the new scientific information which it has received on the pesticides. The Commission will then decide whether it is most appropriate to lift the ban, prolong it temporarily, or make it permanent.

Main weaknesses of the ban

This partial and temporary ban on neonicotinoids in the EU is a good first step. However, the limited scope of the ban means that there are weaknesses and loopholes that will prevent it from having the desired effect: to protect European bees and the crucial role they play in food production and the natural environment³.

1. The ban ignores other pesticides harmful to honeybees

The restrictions apply to only a fraction of the pesticides toxic to bees that are currently marketed in the EU. Pesticides such as chlorpyrifos, cypermethrin and deltamethrin have also been identified as harmful to bees, but are not yet included in the ban. Furthermore, imidacloprid, thiamethoxam and clothianidin have a broad range of applications to different crops, and only a small number of these applications are affected by the ban.

A recent study commissioned by Greenpeace Netherlands and conducted by the Centrum voor Landbouw en Milieu estimates that only 15% of the total use of these dangerous pesticides will be forbidden. [3]

2. The ban ignores the impact of the three pesticides on other (pollinating) insect and animals

EFSA's assessment focused on honeybees and failed to consider scientific studies emphasising the impact of the three pesticides on other important pollinating insects and invertebrates. For example, bumblebees feed on the pollen of potato plants, a crop commonly treated with these pesticides. But since risks to bumblebees were not assessed by EFSA, pesticide use on potatoes is currently excluded from the restrictions.

EFSA recognises this omission: *'it should be noted that the attractiveness of a crop to honeybees is not necessarily the same as to other pollinators. Potato flowers for example are indicated as non-attractive to honeybees, but it is known that some bumblebee species collect pollen from potato flowers. Also, the list focuses on attraction to nectar or pollen and does not take into account other matrices such as guttation fluids (see evaluation in section 2.3, below) or honeydew.'* – EFSA assessment of Imidacloprid, p17. [1]

Bumblebees are often more effective pollinators than bees. Moreover, the limited scope of the ban ignores the pesticides' impact on other invertebrates, especially aquatic ones. Many insects hatch in water, and are affected by neonicotinoid water pollution caused by run-off,

³ Pollinators like bees are directly responsible for about one third of all food.

for example from greenhouse drainage systems. Scientists are finding alarming impacts from these neonicotinoids not only on honeybees and other insects, but also on mammals (including bats) and fish.

3. The ban ignores scientific evidence on synergistic impacts of neonicotinoids

Recent findings point to neonicotinoid-induced immune suppression, making affected organisms significantly more vulnerable to infectious diseases. [4] On the role of pesticides in making insects more vulnerable to diseases, a recent study showed that a higher proportion of bees reared from brood combs with high levels of pesticide residues, including neonicotinoids, became infected with the parasite *Nosema ceranae* at a younger age, compared with those reared from low-residue brood combs. [5]

It is essential to clarify that neonicotinoids affect organisms at different concentration levels. These chemicals have acute toxicity and can cause immediate death if organisms are exposed to them at higher concentrations. However, they also have sublethal toxicity – where organisms do not die immediately – and chronic toxicity – where organisms are affected by low doses over a long timespan. These aspects have become increasingly clear in recent scientific studies. Exposure to low doses of neonicotinoids can impair bees' learning ability, which is crucial to their ability to find flowers to feed on (Desneux et al., 2007). The neonicotinoid imidacloprid has also been shown to impact honeybees at low concentrations, causing delays in feeding trips and increased losses. [6]

4. The ban ignores common pathways of exposure for honeybees

EFSA's scientific assessments have considered only a few pathways of exposure to neonicotinoid pesticides. However, there are more ways in which pollinators are exposed to pesticides, like through guttation fluid or honeydew, which EFSA admittedly has not assessed (see point 2). Honeybees are also known to collect surface water, an exposure route that has been ignored completely. Such a flaw is even more relevant if one considers that in many European regions water has been found to be contaminated by these pesticides.

5. There is no monitoring scheme in place to measure improvements

Since the European Commission has failed to set up an effective research and monitoring scheme, it will hardly be possible for the Commission to report on improvements in the state of health of bees and bee populations on the basis of reliable measurements. In other words, it will be practically impossible for the Commission in two years' time to judge what benefits the ban has provided.

6. Persistence is ignored

The European Commission has failed to take account of the fact that neonicotinoids are highly persistent in soil. Imidacloprid is known to have a half-life period in soils of up to 229 days in field studies and 997 days in laboratory studies, [7] while clothianidin's half-life time in soils is known up to 1,155 days. Because of the pesticides' persistency as well as systemic properties, the neonicotinoids' chemicals accumulate with every new application, and may be taken up by non-target plants or by field crops deliberately planted in the same soil in subsequent years.

According to one study, *'residues of insecticides can reach, and potentially persist, in many places around treated crops that also provide habitat for many pollinator species. Residues of insecticides can, for example, persist in farm soils, be mobilised in dust and air following seeding operations or spraying, reach watercourses around farms, or be present in pollen and nectar of crop plants and neighbouring weeds. They may ultimately be found in the wax of hives.'* [8]

When considering soil persistence, it is clear that the limited timeframe the Commission has given itself to assess the scientific information on the harms that neonicotinoids pose to pollinators is far too short. Two years are not enough to bring about a substantial decrease in the overall levels of bee-harming pesticides in European fields. It is thus unlikely that we will already witness any significant positive effect on honeybees and other pollinators as a consequence of the bans.

Recommendations

Greenpeace welcomes the partial and temporary ban on these three toxic pesticides as a necessary first step. It shows that the European Commission and EU Member States take the bee-decline and the related scientific warnings seriously enough. However, this first step should be followed up by other measures to more effectively protect honeybees and wild pollinators.

The alarming decline of honeybees is multifactorial, whereas Bee-killing pesticides are the most immediate cause of this decline. Honeybees are also experiencing difficulty in finding food because of decreasing biodiversity in landscapes, and are being affected by diseases such as *Nosema ceranae*. These individual causes also exacerbate one another: hungry bees are more susceptible to diseases and poisoned bees cannot find their way to flowers. [9]

Most European landscapes are visibly shaped and dominated by industrial agriculture, which results in monocultures and a lack of biodiversity and, consequently, low food availability for honeybees and wild pollinators. These landscapes deprive pollinators of essential nutrients, leading them to malnutrition and hunger. The area of natural habitats, where bees and wild pollinators can still find nesting places and food, has declined substantially over the years. Banning some pesticides will have a limited effect as long as the underlying structural problems and root causes of bees' decline still persist.

Greenpeace recommends the following measures:

- 1) Make this temporary and partial ban permanent and valid for all applications of the three neonicotinoids.
- 2) Extend the ban to other substances highly toxic to pollinators, which are still authorised for use in the EU, such as chlorpyrifos, cypermethrin and deltamethrin.
- 3) Support and promote ecological farming practices that benefit pollination services within agricultural systems (such as crop rotation, ecological focus areas at farm level, and organic farming methods), through the adoption of national action plans on pollinators.
- 4) Improve conservation of natural and semi-natural habitats in and around agricultural landscapes. Enhance biodiversity within agricultural land.
- 5) Increase funding for research, development and application of ecological farming practices that move away from dependence on chemical pest control towards the use of biodiversity-based tools to control pests and enhance ecosystems' health.

European policymakers should direct more funding to ecological agriculture research under the auspices of the Common Agricultural Policy (CAP) and the EU research framework Horizon 2020.

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