

Pesticide findings are blooming worrying

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A perennial flower margin next to an arable crop - safe haven or not?

I have just read a very thought-provoking paper from a Sussex University team working on the insecticides known as Neonicotinoids. What made this paper particularly interesting is that the team not only looked at the commercial crops being grown, but also the flowering weeds within the crop and the wildflowers growing in the margins of the field too.

As you might gather from the title of the paper – “Neonicotinoid Residues in Wildflowers, a Potential Route of Chronic Exposure for Bees” - the report highlights some potentially very worrying details.

You may recall that “neonics” as they are commonly called, were banned for use in this country on flowering crops such as oil seed rape, while the products were investigated further. This is because the insecticide, which is usually coated onto the seed before planting and then taken up by the crop, is also being detected in the pollen and nectar of these flowering crops. Insects, including bees, then feed on this pollen and nectar, which may or may not affect them.

The Sussex research found that the large majority (97%) of neonics brought back in pollen to honey bee hives in arable landscapes was from wildflowers, not crops. When the team then looked at these wildflowers growing in arable field margins, they found that the pollen and nectar had concentrations that are sometimes even higher than those found in the commercial crop.

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For instance, pollen collected from Hogweed – a very common plant in field margins - often had levels over 10 times that normally found in the crop. “It may be that different plant species differ in their propensity to suck up neonicotinoids from the soil,” says senior study author Dave Goulson. ‘The concentrations in the wildflowers were very variable, much higher than in the crop.’

Laboratory and semi-field studies on honey bees and bumblebees suggest that exposure of colonies to concentrations approximating those found in pollen and nectar of flowering crops can impair pollen collection, increase worker mortality, weaken immune function, reduce nest growth and the production of new queens.

However, a key point of controversy is whether bees consume enough of these compounds during the flowering period of the crop to do them significant harm. It has thus been argued that the levels of exposure used in these studies may be higher than most bee colonies are likely to experience in the field, based on the premise that exposure to neonics from flowering crops will be diluted by bees also foraging on untreated wildflowers.

What many folk seem to have over-looked is that although neonics are not currently allowed to be used on flowering crop plants, they are still widely used on non-flowering crops such as cereals. Very little of the seed coated pesticide is actually taken up by the crop itself, (not much is needed to be effective) with the vast majority presumably leaching off the seed into the adjacent soil, where it stays for a year or two at least, until it degrades and breaks down.

Overall, the results from this study demonstrate that the application of neonicotinoid seed dressings to autumn-sown arable crops results in contamination of pollen and nectar of nearby wildflowers throughout the following spring and summer, and that wildflowers were the major route of exposure for bees.

Julian Little, spokesperson for Bayer Crop Science, one of the major manufacturers of neonics, says the paper is ‘very much aligned with the idea that if you can find something, it must be doing harm, which goes against what we know about chemistry: it is the dose that makes the poison’.

Bayer is currently awaiting the results of experiments being conducted by the UK’s Centre for Hydrology & Ecology on neonicotinoids in oilseed rape in England, Hungary and Germany. ‘We are very hopeful that when those results are published sometime next year neonicotinoids will be given a clean bill of health,’ says Little.

The Sussex University report finishes with some advice for those land managers thinking of planting some wild flower areas to help pollinators. “It would seem best to promote the creation of wildflower patches that are not adjacent to treated crops or on soil in which treated crops have previously been grown to avoid exposure to neonicotinoid residues via this route.

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