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# There is no easy solution to the problem of the bees

By Mark Walport

A proposed ban on a major class of pesticide would be a mistake, writes Mark Walport

**T**he EU may be about to make a mistake. The European Commission has proposed a temporary ban on the use of certain agricultural pesticides. It should drop this idea. The consequences of such a moratorium could be harmful to the continent's crop production, farming communities and consumers.

This plan is motivated by a quite understandable desire to save the beleaguered bee and concern about a serious decline in other important pollinator species. But it is based on a misreading of the currently available evidence.

In a vote, tabled for next Monday, member states will be asked to decide whether a group of neonicotinoids – a class of insecticides introduced during the early 1990s as safer alternatives to DDT and other pesticides – should continue to be used extensively inside the EU's borders.

Pesticides really do matter – and restrictions on their use ought not be introduced lightly. Globally, they are important tools in dealing with deadly human diseases, including malaria, dengue and sleeping sickness.

The crops on which we depend can be destroyed easily by diseases, pests and weeds. Pesticides and herbicides, combined with plant breeding programmes, have increased crop yields, helping to feed burgeoning global populations.

There are important uncertainties about our knowledge of the effects of pesticides on ecosystems and the diversity of insects within them. Insecticides are designed to kill insect pests – but other insects are potentially vulnerable, and we need to apply them in ways that target our insect “foes” rather than our “friends”.

The concern has arisen both because of the recognised decline in bee populations but also the signs of harm when bees are exposed to neonicotinoids under laboratory or “semi-field” conditions. However, there is no measurable harm to bee colonies when they

are exposed to them when these pesticides have been applied on farms following official guidelines.

We do not fully understand the difference between the results, but the most likely explanation is that the dose and intensity of exposure is higher in the laboratory. So what should politicians do?

Decisions must be informed by the best evidence and expert advice. The application of the “precautionary principle” can help to guide this. This simple idea just means working out and balancing in advance all the risks and benefits of action or inaction, and to make a proportionate response.

All too often, people citing this principle simply overreact: if there is any potential hazard associated with an activity, then it should not be done, or, if it is already being done, it should be stopped.

In this case, people considering a ban must look at the impact of a moratorium on the challenge of feeding a growing global population with a changing climate. They should also consider the economic cost of severe reductions in yields to struggling European farmers and economies.

Thanks to our close relationship with the honey bee, the bee has become a totem of the challenge to pollinators in human-dominated landscapes (though in fact, the bumble bee is more susceptible to neonicotinoids). However, we should be more concerned by the global decline in pollinating insects in general.

But we will be making a serious mistake if we think that the challenge to pollinating insects will be fixed simply by banning neonicotinoid pesticides. A better place to start would be to ensure that pesticides are applied strictly according to the guidelines for their use.

In the longer term, we need a comprehensive action plan, exploring the complex factors behind the decline of pollinators. We must develop and evaluate methods of increasing the diversity of flowering plants in landscapes increasingly dominated by human cultivation.

If we want to reduce our dependence on pesticides and herbicides while delivering the crop yields essential for human health and well-being of growing populations, we will have to turn to new technologies, using DNA technologies and genetic engineering to develop new plant varieties.

We need to develop new tools, including the use of novel agricultural practices, natural plant defence mechanisms, the use of predators and other approaches in biocontrol measures. Where there is uncertainty, we must reduce this by further field work.



But lest we forget, human and animal health depends on effective agriculture. The control of malaria, dengue and other important diseases also depends on the control of insect vectors. Equally we must remember that human and animal health depends on the rich ecosystem of our planet.

The job of scientists is to undertake the scientific work and to advise politicians on science – and it is to them that we must turn for the final decisions. These decisions are important – but also often extremely difficult.

*The writer is the UK government's chief scientific adviser*

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