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## **Pesticides and Honey Bees - both essential to Agriculture**

**Food production is of ever increasing importance in Europe – the provision of high quality affordable food has contributed substantially to the health and well-being of European citizens for the last 50 years. Vital to the success of European agricultural food production are both:**

- 1. Flower pollination, which is essential for yield and survival of many agricultural crops - honey bees are the most valuable pollinators of agricultural crops worldwide; and,**
- 2. Safe and effective pesticides, which are crucial to protect crops against harmful organisms such as destructive insects, plant diseases and weeds - without crop protection nearly half of the current harvest would be lost each year.**

**Unfortunately, a significant increase in bee colony losses has been observed in many countries in Europe and overseas, which has evoked concerns about pollination of crops and other plants. The losses observed have sparked discussion as to the possible effects pesticides might have on honey bees. When used properly and strictly as recommended, the evidence shows that the use of pesticides has little or no effect on honey bees. However, insecticides are designed to control destructive insects, and it is the timing, technologies, dose rates and routes of application that prevent them from being harmful to honey bees; the responsible use of insecticides is therefore paramount.**

**Simply banning pesticides is clearly not the way forward and not an appropriate option. Instead, we should ensure that approved pesticides – safe under normal field conditions – are used properly and responsibly. Results from national monitoring schemes – which collect data on honey bee incidents – show that this objective is largely achieved. Careful regulation and management of pesticide use and continuous investment in optimized use conditions and technologies are key in this respect.**

### **Causes of increased bee mortality**

Given the important role honey bees play in eco-systems and in agriculture in particular, researchers, bee specialists and governments alike are investigating the causes of the increased honey bee mortality. The majority of experts agree that the problems observed are due to a variety of interrelated causes, involving primarily the parasitic mite (*Varroa*), but also: other honey bee diseases, viral infections<sup>1</sup>, inappropriate hive management and insufficient disease control, as well as certain environmental factors. Extensive honey bee monitoring programs in Germany, France, Italy and Belgium have not shown any significant impact from the use of pesticides.

For this reason and because the increased honey bee mortality is believed to be caused by multiple factors, with large uncertainty about the influence of each, banning pesticides - as it appears the easiest political solution - would be both ineffective and harmful:

- ❖ Ineffective because it will not solve the problem, as illustrated by a French suspension in 2004. In spite of the ban of the suspected pesticide on maize, significant losses of honey bee populations is still occurring.
- ❖ Harmful because less pest and disease control as a consequence of reduced pesticide use will result in yield and quality losses, thus increasing food prices and food spoilage and higher import requirements from overseas. All without solving the problem of honey bee decline.

<sup>1</sup> Pests and parasites such as *Varroa* and *Nosema*; bacterial diseases, e.g. American and European foul brood; fungal diseases, e.g. chalkbrood; and viral diseases such as the Israeli acute paralysis virus.

Including 'bee toxicity' as an approval criterion in the way proposed by the European Parliament's first reading, on the new regulation for authorising pesticides, would lead to the banning of 85% of all insecticides according to a study conducted by the UK governmental pesticide regulatory authority (PSD). The insecticides left on the market would not be sufficient to ensure effective pest control and would lead to an increase in resistance problems.

### **Pesticides are very well regulated, protecting honey bees and the environment**

By their very nature, pesticides have substance specific characteristics that can cause harm to living organisms - they have been designed to control specific living organisms that would otherwise consume, spoil or out-compete crop plants. For this reason, their use is carefully regulated and monitored:

- Modern plant protection products are developed and used in such a way that the potential disease-causing organism is targeted without causing any harm to other, non-target species.
- The EU approval procedure for pesticides ensures a thorough, independent scientific evaluation in order to ensure that approved substances are safe when used correctly.
- The potential risk to pollinating insects from the use of pesticides is specifically addressed in current EU legislation (Directive 91/414/EEC). A systematic approach is applied to determine the risks to honey bees and their brood and colonies<sup>2</sup>.
- When needed, mandatory use obligations to protect honey bees and other beneficial insects are dictated, indicating for instance that the pesticide should not be applied to crop plants when in flower, should not be used where honey bees are actively foraging or that beehives should be removed or covered during application.
- National post-registration monitoring schemes collect data on honey bee incidents, including cases of possible poisoning of honey bees by pesticides. If needed, pesticides are withdrawn or the application method is changed to ensure honey bee safety.

### **Insecticides are safe when used correctly**

Overall, the current regulations and monitoring schemes provide for a high level of bee protection. Unfortunately, despite strict regulation, local honey bee incidents have occurred on rare occasions when products were used incorrectly. A recent accident in Germany raised concerns about the safe use of insecticides in seed treatment applications, which is one of the most environmentally sound application methods of crop protection and therefore often the method of choice. An expert committee established by the regulatory authority in Germany and including the most important beekeeper organizations in Germany has now determined that the cause of the honey bee mortality in this particular case was an error in the seed treatment process in combination with the sowing machinery used, leading to an unexpected contamination of foraging honey bees in neighboring fields. The Crop Protection industry - which has done everything to support the regulatory authorities in resolving this case - has rapidly reacted to this incident by drastically increasing stewardship<sup>3</sup> measures to ensure that such an incident will not happen again. It would be entirely disproportionate to use this particular accident to call for a ban of all insecticides.

### **Conclusions**

As with most technological developments that improve the quality of our lives, pesticides are safe when used judiciously and with appropriate precaution. Regulation of pesticides must ensure that the benefits arising from their safe and recommended use are carefully weighed against any potential risks. The replacement of appropriate risk assessment by hazard-based approval criteria does not meet these requirements. They fail to recognize the agricultural reality of today while providing little additional human health or environmental benefit. The crop protection industry remains fully committed to investing in new technologies and improvements in order to provide the European agricultural community with most modern and highly competitive crop management tools, which are safe to honey bees and to the environment, and which do not affect the agricultural need for secure and sustainable crop pollination.

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<sup>2</sup>As a first step, the hazard quotient (HQ-50) is determined as an initial indication of whether the substance has possible bee toxic characteristics. If so, this triggers further studies under normal field conditions, which have to demonstrate that there are no concrete dangerous effects on honey bee larvae, honey bee behavior, or colony survival and development after use of the plant protection product according to the proposed conditions of use. Insecticides targeting the nervous system of insects will for instance in most cases, trigger further studies.

<sup>3</sup>Stewardship is the ethical and responsible management of a pesticide throughout its whole lifecycle by the responsible company.