

## **Knowledge management of pesticide risks to wild pollinators**

A cooperative research and knowledge management project of Brazil, Kenya and the Netherlands in collaboration with FAO.

Every continent, except for Antarctica, has reports of pollinator declines in at least one region/country. Simultaneously the demand of agriculture for insect pollination has multiplied the last decades due to an increased cultivation of pollinator dependent crops. To stop the loss of biodiversity, both pollinators and the interdependent flowering plants, time is running out (Biesmeijer et al., 2006; Johnson, 2010). This has also been acknowledged by the Convention on Biological Diversity, which has stated that pollination services are essential to maintaining biological diversity.

The use of pesticides plays an important role in the loss of pollinators, together with intensification of agriculture and the loss of habitats. The essential pollinators for many crops have so far not yet been identified. In tropical areas and crops honey bees are rarely managed for pollination and the contribution of wild pollinators to horticultural crop production is essential.

Nevertheless risk assessment and registration procedures of pesticides are based on only one pollinator, the European honey bee. Much of the testing procedures have been based upon Dutch (early) research. To base the risk assessment on honey bee data is correct if the sensitivity of wild pollinators is comparable or less than the sensitivity of the honey bees. If not the risk assessment should be based on the most sensitive species (as is normal practice in the risk assessment procedures for (other) non target organisms). No solid data regarding wild pollinator sensitivities to pesticides are available to decide upon the comparative sensitivities.

1. LD<sub>50</sub> (contact application) data will be generated starting in 2010 in a ring test performed in Brazil, Kenya and the Netherlands, with local honey bees and two local wild bee species per country. The aim is to test with four representative formulated pesticides.
2. Based upon the LD<sub>50</sub> tests a (preliminary) Species Sensitivity Distribution will be made.

A species sensitivity distribution is a first and essential step to set up assessment procedures and to fill the identified (underlined) knowledge gap. However the totally different life histories as well as foraging behaviours of wild pollinators compared to honeybees obviously will result in very different exposures. Knowledge about the biology of the wild pollinators has therefore to be included in the assessment schemes. However full knowledge of all aspects cannot be awaited.

3. To anticipate the availability of pollinator sensitivity data, draft mitigation measures will be proposed for the pilot crops (e.g. tomato), based upon expert consultation
4. A full project proposal will be developed to set up a system of pesticide risk management for wild pollinators, which can be used to build upon for wider use in other countries.
  - a. Development of a generic risk assessment model for pollinators
  - b. Development of guidelines for mitigation measures (based on expert judgement)
  - c. Raise awareness of the negative effects that pesticides may pose on wild pollinators

The project runs integrated in the UNEP-GEF project "Conservation and Management of Pollinators for Sustainable Agriculture, through an Ecosystem Approach" in Kenya and Brazil and has connections with the STEP project (FP7-EU) & the Coloss network (COST-EU).

## **References**

Biesmeijer J.C., S.P. Roberts, M. Reemer, R. Ohlemueller, M. Edwards, T. Peeters, A. Schaffers, S. G. Potts, R. Kleukers, C.D. Thomas, J. Settele, & W. E. Kunin. 2006. Parallel declines in pollinators and insect pollinated plants in northwest Europe. Britain and the Netherlands. *Science*. *Science* 313 (5785);

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