

Effects of neonicotinoids on honeybees, bumblebees and solitary bees in oilseed rape cultivation: Project ABO 2014

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Neonicotinoids such as imidacloprid, clothianidin and thiamethoxam are systemic insecticides that are frequently used as seed treatment in cereals and bee-attractive crops such as oilseed rape. Currently, the effects of these neonicotinoids on pollinators are widely discussed at international level.

In April 2013, the EU commission agreed on a two-year ban of those agents being used as treatments for certain crop types. During this period, new studies are commissioned to assess and clarify the potential threat of these insecticides to pollinators, such as honeybees, bumblebees and solitary bees, caused by residues in nectar and pollen.

To date, the influence of oilseed rape treated with neonicotinoids on the mortality, development and reproduction has been mainly investigated for honeybees. However, for solitary bees and bumblebees, hardly any higher tier studies in semi-field or field conditions are available and validated methods to evaluate potential risks of pesticides are still lacking.

In order to develop a standardized methodology, pilot field trials and semi-field trials were conducted in 2013 using the Western honeybee (*Apis mellifera*), the buff-tailed bumblebee (*Bombus terrestris*) and the red mason bee (*Osmia bicornis*) as model organisms. Based on experiences gained in these trials, follow-up experiments will be conducted in 2014.

These experiments are part of the "ABO 2014" project which is coordinated by the Julius Kühn-Institut in Braunschweig and will be conducted in five federal states in spring 2014. This study aims to evaluate potential risks of neonicotinoids for honeybees and other pollinators, to develop new evaluation methods and to establish new test guidelines and standard procedures. Several variables such as the mortality, development and reproduction of the target organisms as well as residue concentrations of neonicotinoids in pollen and nectar and their lethal and sub-lethal effects on bees will be assessed.