

Neonicotinoids and bees: Effects on honeybees, bumblebees and solitary bees in oilseed rape grown from Clothianidin-treated seed

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To date, the potential side effects of oilseed rape treated with neonicotinoids on the mortality, development and reproduction have 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. Thus, field trials and semi-field trials were conducted in five federal states in spring 2014 using the Western honeybee (*Apis mellifera* L.), the buff-tailed bumblebee (*Bombus terrestris* L.) and the red mason bee (*Osmia bicornis* L.) as model organisms. Small colonies (*A. mellifera*, *B. terrestris*) and artificial trap nests with cocoons (*O. bicornis*, each 33 male and female cocoons) were placed right next to flowering oilseed rape (*Brassica napus* variety SHERPA® or AVATAR®). There were five treated and five control fields, and four colonies and three trap nests per field, resulting in 40 colonies of *A. mellifera* and *B. terrestris* and 30 trap nests with *O. bicornis* per treatment.

Additionally 48 tents were set up before flowering of oilseed rape, each tent containing one small honeybee colony, two small bumblebee colonies and three trap nests with solitary bees. Before, during and after exposure mortality and brood development were regularly assessed. Samples of nectar or honey and pollen were regularly collected and the samples were analysed for residues. Overwintering success of honeybee colonies, fertility of bumblebee queens and hatching rate of solitary bee cocoons are going to be assessed in spring 2015.

These long-term investigations are part of the “ABO 2014” project which is coordinated by the Julius Kühn-Institut in Braunschweig. This study aims to evaluate potential risks of neonicotinoids for honeybees and other pollinators and to develop new evaluation methods. Partly funded by BMEL, BVL and JKI.