
Section III: Methods and risk assessment for seed treatments and guttation

3.1 Dust drift- from exposure to risk for honey bees

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Abstract

Dust drift during sowing of maize seeds treated with neonicotinoids has led to several severe honey bee poisoning incidents in the past. Studies have been conducted to assess the abrasion potential of treated seeds, the influence of different sowing machines, and effects on honey bees in semi-field and field conditions. In the JKI a number of field and semi-field trials with sowing of treated seeds assessing effects on honey bees and also with manual application of small amounts of dusts were conducted.

Several trials were conducted with sowing of winter oil seed rape (4 trials) and maize (3 trials) and an adjacent flowering crop, either winter oil seed rape or mustard both downwind and upwind of the sown area. Sowing was conducted when wind direction was at the achievable optimum. Residue samples from petri dishes for 2-D and gauze collectors for 3-D drift of dust drift were taken as well as samples from the adjacent flowering crop. Honey bee colonies were placed both upwind and downwind of the sowing area and served as treated variant and respective control.

As sowing was conducted during bee flight activity, hive entrances of colonies in the semi-field experiments were closed from early morning until end of sowing. Thus a worst case scenario was obtained for exposure of bees to dusts deposited on flowers, nectar and pollen.

The high number of the trials conducted between 2009 and 2014 allows a detailed insight of the correlation between Heubach a.i. values, 2-D and 3-D exposure and effects on honey bees after sowing of different crops.