Dust in the wind – drift of dust containing insecticides
– a risk for honey bees (*Apis mellifera* L.)?

**Dust in the Wind – Abdrift insektizidhaltiger Stäube
– ein Risiko für Honigbienen (*Apis mellifera* L.)?**

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Structure

- I. Bee losses in Germany in 2008**
- II. Cause: drift of clothianidin-containing dust of seed treatment**
- III. Drift experiments with Clothianidin treated seeds and bees**
- IV. Application trial with dusts of different particle size**
- V. Outlook**

Bee losses in Germany in 2008

- 🐝 Start: end of April 2008
- 🐝 Large-area scale of massive bee poisonings within a few days
- 🐝 Spatial and temporal relationship with the sowing term of maize seed treated with Poncho® Pro
 - Eradication of western corn rootworm (*Diabrotica virgifera virgifera*, LeConte)

Cause: drift of clothianidin-containing dust of seed treatment

Cause: drift of clothianidin-containing dust of seed treatment

Dust in seed bags

Drift experiments with Clothianidin treated seeds

Field plan of drift experiment, Maize sowing in 2010

Total field size: 242 m length x 90 m width

Legend

1- 8 Experimental plots
(* = 90 m version)

Version A (open area)
without vegetation, 30m long
and 30m wide

Version B (with rape)
50m long and 30m wide

Wooden cages + petri dishes

bee colonies outdoor

weather station

bee tent (6m x 16 m)

wind direction

Drift experiments with Clothianidin treated maize seeds and honey bees

Mortality in field colonies in drift experiment / maize from 15.05. - 24.05.2010 (n = 4)

Drift experiments with Clothianidin treated maize seeds and honey bees

Mortality in semi-field colonies in drift experiment / maize from 15.05. - 24.05.2010 (n = 3)

Drift experiments with Clothianidin treated maize seeds and honey bees

Drift experiments with Clothianidin treated maize seeds and honey bees

1

Oral feeding test
with contaminated
honey water

2

3

5

4

Application trial with dusts of different particle size

Standard soil (LUFA 2.2)

W - wheat / W – barley (fungicide)

Maize (Clothianidin)

$X \leq 80\mu\text{m}$

$250\mu\text{m} < X \leq 355\mu\text{m}$

$X > 500\mu\text{m}$

Fractions of dust samples

Application trial with dusts of different particle size

Nature Precedings : doi: 10.1038/npre.2011.5738.1 : Posted 28 Feb 2011

Application trial with dusts of different particle size

Mortality in semi-field colonies in application trial / phacelia
from 27.07. – 05.08.2010, VTI

Outlook

- Comparison of the toxicity: spraying / dust
- Study of the spatial distribution of the individual fractions of seed treatment dust (wind tunnel)
- Filter effect of different crops(surface structure)
- Study of sublethal effects on bees and their brood
- Quantitative determination of active ingredient per hectare - NOEC, LOEC;

Thank you for your attention!

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