Collecting and Sharing Data on **bee health** Towards a European Bee **Partnership**

BRUSSELS, 26 JUNE '17

Bee health monitoring and pollination

Jozef van der Steen, Wageningen UR

Koos Biesmeijer, Naturalis Biodiversity Center

efsa European Food Safety Authority

European Professional Beekeepers Association e.p.b.a.

copa cogeca european farmers european agri-cooperatives

European Crop Protection

European Beekeeping Coordination

HONEYBEE SURVEILLANCE STUDY NETHERLANDS (2014-2018) SAMPLING BY BEEKEEPERS (CS / CROWD SAMPLING)

Sampling box
Postal package
Picture instruction manual
Questionnaire: beekeeping practice, land use

PEST, DISEASES AND POLLEN (AUTUMN)

Pest/Disease	2014	2015	2016
Varroa present (%hives)	73%	63%	68%
Varroa mites / 100 bees	7	3	5
Nosema ceranae	89%	59%	22%
Nosema apis	0%	0.6%	1%
DWV virus	98%	93%	96%
ABPV virus	0%	1%	9%

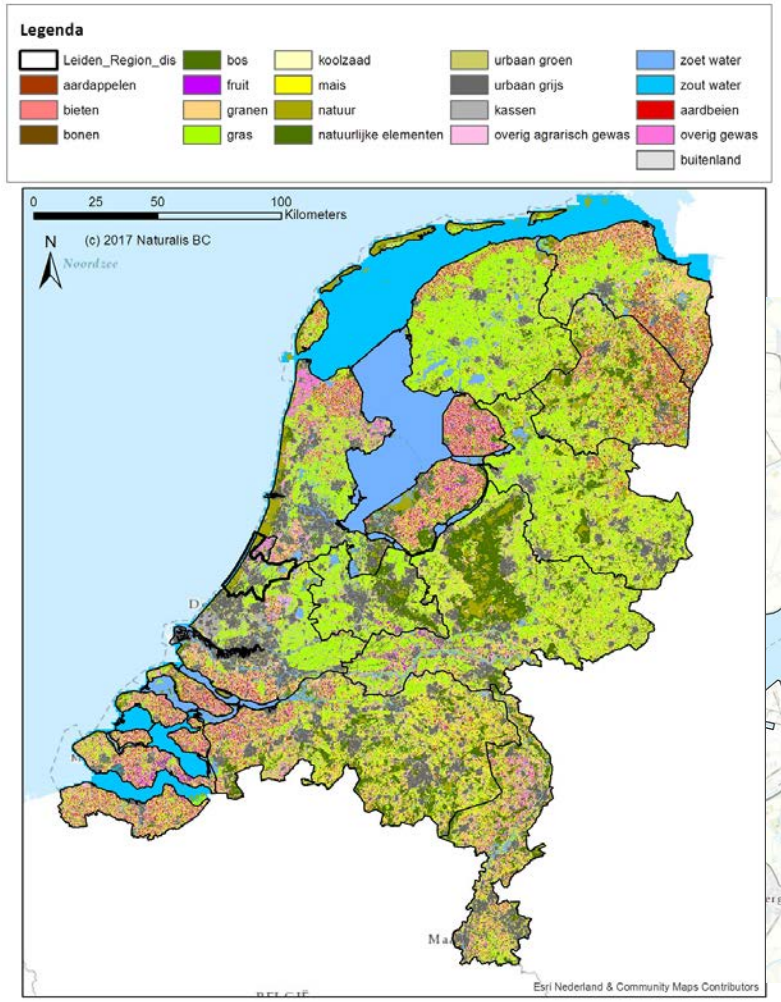
Pollen type 2016	found in # samples	% of total	max	ave. When present
Brassicaceae (mustards, rapeseed)	170	53.3	100	28.4
Trifolium (clovers)	135	42.3	100	24.3
Asteraceae (dandelion family)	102	32.0	100	14.8
Calluna (heather)	96	30.1	100	46.4
Castanea	81	25.4	90	35.1
Rosaceae (rose family)	67	21.0	100	24.0
Fabaceae	54	16.9	90	24.2
Cornus- type	44	13.8	40	11.1
Impatiens	43	13.5	95	31.7
Zea (mais)	38	11.9	30	7.2
Heracleum	32	10.0	65	11.6

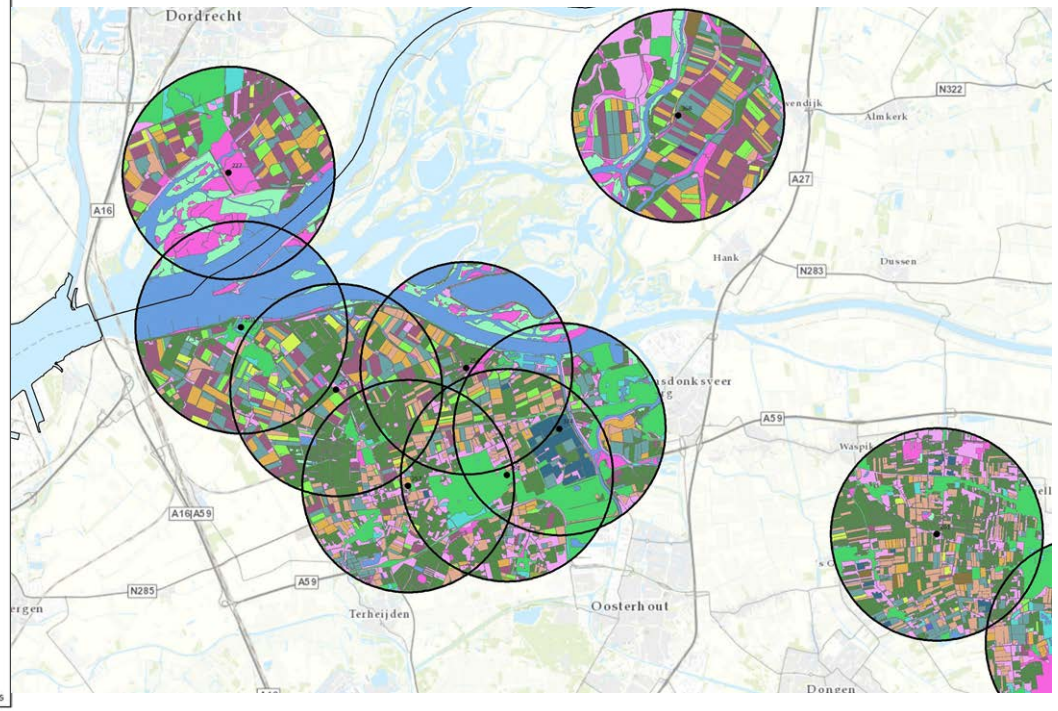
PPP RESIDUE (# 35) IN HONEY/WINTER STORAGE 2016

Werkzame stof	Groep	Positief (%)
Acetamiprid	Neonicotinoid	13 (3.8%)
Amitraz	Amidine	8 (2.3%)
Boscalid	Carboxamide	20 (5.8%)
Carbendazim {Ook thiophanate-methyl metaboliet}	Benzimidazole	2 (0.6%)
Chlorfenvinphos	Organophosphate	2 (0.6%)
Clothianidin {Ook thiamethoxam metaboliet}	Neonicotinoid	1 (0.3%)
Coumaphos	Organophosphate	18 (5.3%)
Dimethoate	Organophosphate	1 (0.3%)
Fluopyram	Benzamide, pyramide	3 (0.9%)
Imidacloprid	Neonicotinoid	1 (0.3%)
Omethoate {Ook dimethoate metaboliet}	Organophosphate	1 (0.3%)
Tebuconazole	Triazole	5 (1.5%)
Thiacloprid	Neonicotinoid	28 (8.2%)
Thiamethoxam	Neonicotinoid	2 (0.6%)

LAND USE

Geaggregeerde landgebruikklassen BRP2015 + BBG2012





WINTER MORTALITY (E-QUESTIONAIRY AND TEL. CALL (NBV, WAGENINGEN UR, NATURALIS)

DUTCH SURVEILLANCE DATA AVAILABLE, E.G. FOR META-ANALYSIS

JOZEF VAN DER STEEN, WAGENINGEN UR
KOOS BIESMEIJER, NATURALIS BIODIVERSITY CENTER

Data from the Dutch honeybee surveillance study 2014-2018 available for collaborative projects – reports available online:

- *Qualitative prevalence of DWV and ABPV, Nosema apis and N. ceranae; quantitative data on* Varroa *presence*
- *Quantitative data on pesticide residue in honey storage / winter food*
- *Quantitative data on pollen types in autumn beebread*
- *Quantitative data on land-use in proximity of apiaries*

General remarks about NL honeybee surveillance results:

The well-being of honeybee colonies depends on

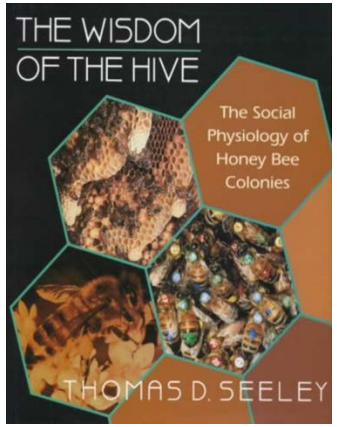
- *Varroa control*
- *Land use / food availability*
- *Beekeepers attitude and skills*
- *Agrochemicals have not been found to affect NL winter survival*

What is needed is a shift in focus to combat winter loss:
from pesticides to Varroa-resistance, beekeeper training and extension, and habitat restoration (hedgerows, green corridors) for the benefit of all bees.

Beekeepers need to follow needs of bees instead of their own needs

RECOMMENDATIONS

SJEF VAN DER STEEN, WAGENINGEN UR
KOOS BIESMEIJER, NATURALIS BIODIVERSITY CENTER



Honeybees need the wisdom of man to live and survive in an agricultural, urban, industrial world.

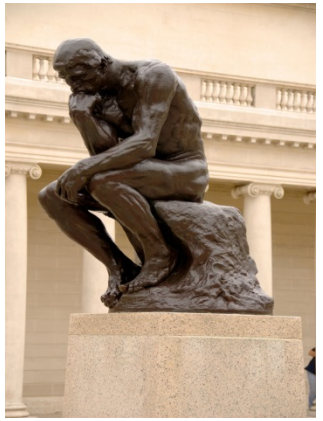
Pesticide regulation and testing is a basic condition for protection of all bees

Education of beekeepers in both honeybee biology and apiculture to cope with the changing local environment is a prerequisite for healthy honeybees (beekeepers follow the bees' needs)

For citizen science / crowd sampling studies to be effective, we need to:

- Take beekeeper motivation to participate into account

- Explore whether non-sacrificial sampling of bees, disease, pesticides and pollen would be possible



Think European, act locally

DATA NEEDS TO IMPROVE ANALYSIS POLLINATION SERVICES

- To optimize pollination services from honey- and feral bees it is up to the scientific community to
  - *Involve the beekeeper in studies (crowd sampling)*
  - *Design simple sampling- / monitoring toolbox (including non-sacrificial sampling) for monitoring study on foraging conditions and exposure to contaminants / pesticides*
  - *Study on pesticides 2.0: actual exposure to pollinating insects*
  - *Make a scientific based outline of biology based Good Beekeeping Practice BeeBook*

- Data needed to achieve this?
  - *Data on regionally and locally carrying capacity of landscapes to feed and house feral- and honeybees*
  - *Data on actual exposure routes of pesticides to honey- and feral bees*

THE END, QUESTIONS?