Pollinators and Pesticides: Integral Components of Sustainable Agriculture
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Representing the developers, manufacturers and distributors of plant science innovations – pest control products and plant biotechnology
CropLife Canada Goals

• Increase awareness, understanding and acceptance of the benefits, safety and sustainability of plant science innovations

• Secure legislation, regulation and policy that encourage science and industry innovation

• Be world leaders in lifecycle stewardship of pest control products and plant biotechnology traits

• Forge and lead alliances with stakeholder groups to help achieve the industry’s vision and sound public policy
Food production
Integral components of sustainable agriculture

Crop Protection + Pollinators
Average overwintering loss (last 5 years)

25%* Canada

30% US

* Approximately 15% in 2011-2012

Sources: CAPA (2012); vanEngelsdorp (2012)
Bee losses are not consistent

- **USA**: 33.8% losses
- **Europe**: 1.8%–53% losses
- **Middle East**: 10%–85%
- **South America**: No reports of high losses
- **Africa**: No reports of high losses
- **Japan**: 25% of beekeepers report sudden losses
- **Australia**: No reports of high losses

Source: Neumann et al. 2010
Main factors affecting bee health

Sources: Guzman-Novoa et al. (2010); vanEngelsdorp and Meixner (2010); etc.
Neonicotinoids

- Registered in 1990s (foliar) and 2000 (seed treatment)
- High target specificity (nAChR)
- Excellent replacement for older chemistries
Value of seed-applied insecticides (SAIs)

- Benefit of neonicotinoids in controlling key insect pests is clear
Neonicotinoids and bees

Bee deaths (acute)

Bee health (chronic)
System-wide approach

- Research and Regulation
- Stewardship
- Investment in Bee Health
1. Research and Regulation

- Laboratory
- Exposure Refinement
- Semi-Field
- Full Field
Neonics and bees: What do we know?

• Attracted considerable attention as a possible cause of declining bee health but:
  – Detected at low frequencies, and low levels, in hives
  – No long-term effects on colonies from dietary exposure
  – No improvements in bee health following suspensions
  – History of safe use
Colony losses in Canada

- Overwintering loses attributed to a number of factors
- Varroa resistance
- No correlation with the use of SAIs

References:
Currie et al. 2010. J. Apicultural Research
Guzman-Nova et al. 2010. Apidologie
Canadian Association of Professional Apiculturists (2011; 2012)

Corrected (Aug/13)
Coexistence of SAIs and bees

Canola in Alberta (example)

Year

Canola area seeded (ha)
0 500000 1000000 1500000 2000000 2500000 3000000

Number of colonies
0 50000 100000 150000 200000 250000 300000

Seeded Area (canola)  Colonies
2. Stewardship
Ongoing collaborations
System approach (cont’d)

3. Investment in bee research


The ideal when studying applied problems is to provide a management solution, implement that solution and then test its efficacy under field conditions. The majority of studies fall short of this, usually stopping before offering a management solution. An exception to this is Carvell et al. (2007) where the co-authors are government scientists, a university academic and a practitioner. They test the management recommendations from a number of short-term, single site studies using a large-scale field experiment. The experiment tests the attractiveness to bumblebees of six types of field margin implemented on six farms spread across central and eastern England and sampled numerous times over three years. The end result is a very large dataset which
For more information

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