

Pollination by wild bees: the case of oilseed rape

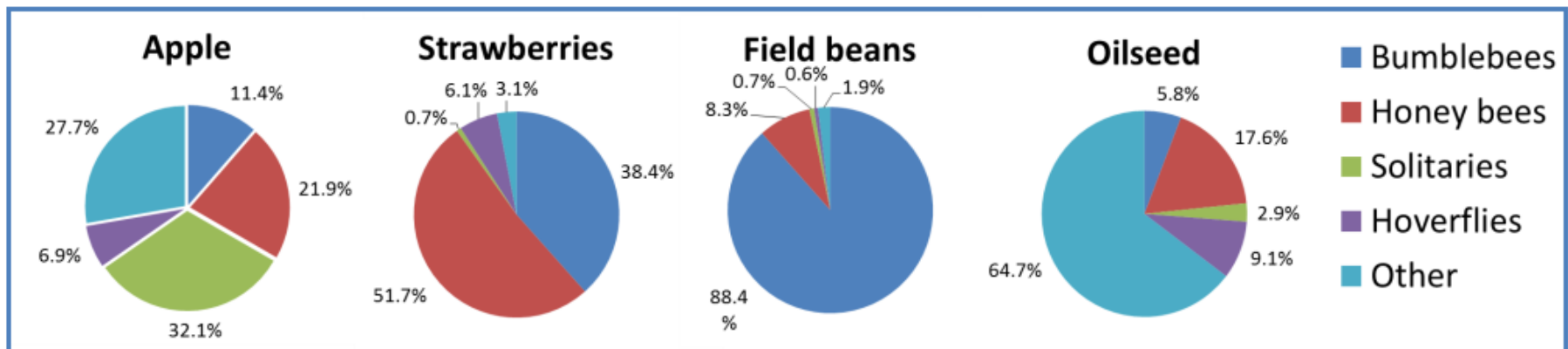
Dr Chris Hartfield
Lead on bee health & pollinators
National Farmers' Union, UK

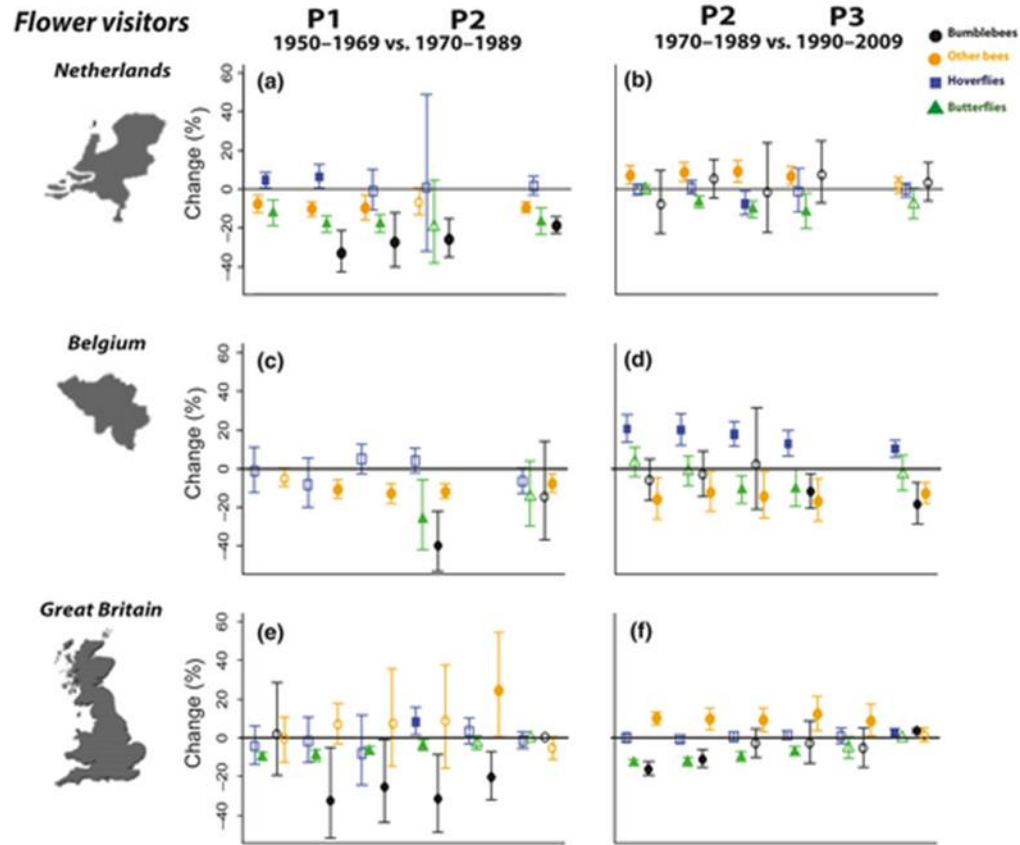


- **pollinators contribute 18% to oilseed rape yield and 20% to market value**
(Bommarco *et al.* 2012)
- **need for insect pollination different for different rapeseed varieties**
(Hudewenz *et al.* 2013)

- oilseed rape is visited by many different pollinators, with bees playing an important role (Garratt *et al.* 2014, and Garratt 2013)

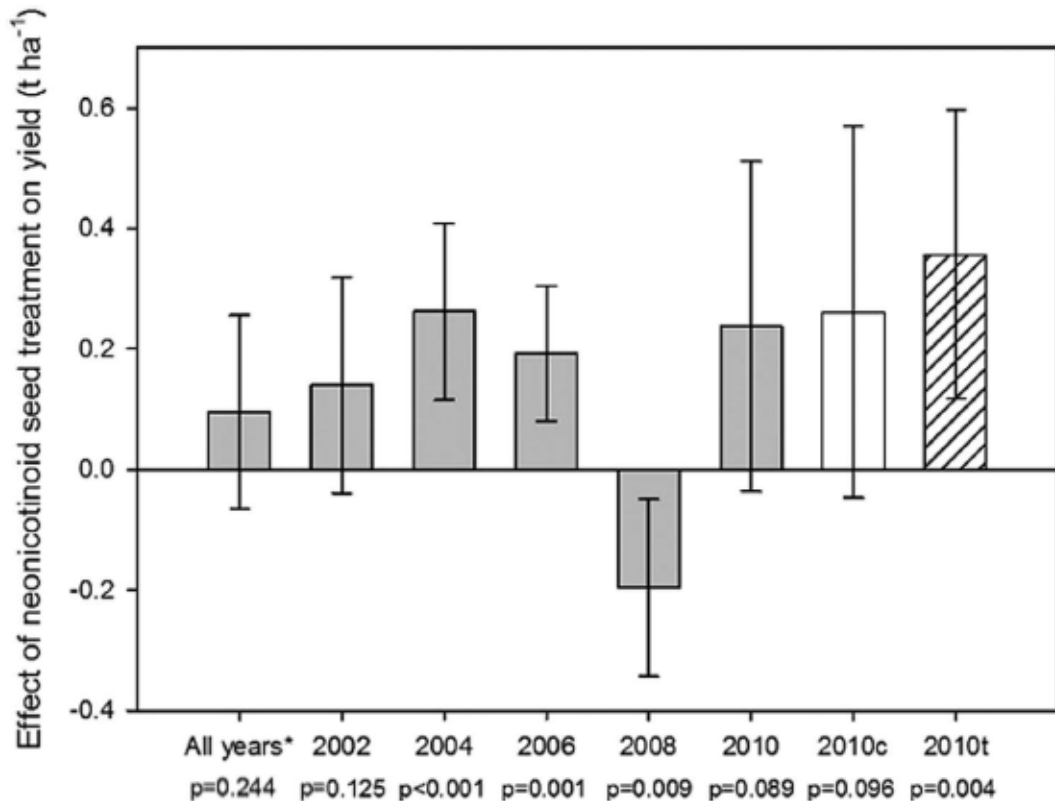
Crop production





Species richness declines and biotic homogenisation have slowed down for NW-European pollinators and plants – Carvalheiro et al, Ecology Letters, Volume 16, Issue 7, pages 870–878, July 2013

- **Swedish study - harmful impacts on wild bees (but not honeybees) in real fields. Does this mean neonicotinoids are causing widespread declines in bee populations?**
(Rundlöf *et al.* 2015)
- **Study published in August in Nature - impact of neonicotinoid use on oilseed rape on both food production and pollinators**
(Budge *et al.* 2015)
 - **neonicotinoid use reduces farmers' use of foliar insecticide sprays**



- significant benefits to UK oilseed rape yields as a result of neonicotinoid use.

Figure 5. Estimated effect of imidacloprid (grey), clothianidin (clear) and thiamethoxam (hatched) seed treatments on oilseed rape yield (t ha⁻¹) when compared to crops that received no insecticide seed treatment. Estimates, p-values and 95% confidence intervals are derived from linear models for each individual year or a mixed effect linear model for all years (imidacloprid only;*).

TOWARDS HOLISTIC APPROACHES TO THE RISK ASSESSMENT OF MULTIPLE STRESSORS IN BEES

Table 1. Hypothetical ranking of the protection goals and how they might be perceived by various stakeholders in terms of importance.

| Protection goal | "In-field" (priority depends on stakeholder) | | | | "Off-field" (priority depends on stakeholder) | | | |
|--|---|------------|------------|-----------|--|------------|------------|-----------|
| | Farmers | Beekeepers | Ecologists | Consumers | Farmers | Beekeepers | Ecologists | Consumers |
| Biodiversity (populations and species, & wild plant pollination) | 4 | 1 | 3 | 3 | 2 | 1 | 1 | |
| Crop pollination (=pollination services) | 2 | 3 | 2 | 2 | 3 | 4 | 4 | |
| Honey production | 1 | 4 | 4 | 4 | 1 | 3 | 3 | |
| Crop production (food, horticulture, energy crops) | 3 | 2 | 1 | 1 | 4 | 2 | 2 | |

Hence, the "in-field" and "off-field" question of what needs protection is not simple and will vary by stakeholder. The group felt that a generic set of risks assessments and/or protection goals would work best as it would be impossible to look at each land parcel or situation individually. Even considering the complexity of the views and stakeholder interests, a clear set of protection goals would help policy makers weigh the pros and cons of different conservation/protection/augmentation schemes.

- **Bee Farmers Association**
- **British Beekeepers Association**





Farming for bees

What farmers can do for pollinators

Email: bees@nfu.org.uk
Search on Twitter for #farmi



Provide sites for honeybees

Honeybee pollination can help farmers and growers improve yields, crop quality and consistency. Farmers and growers have a key role to play in increasing the number of UK beehives, by working with bee keepers to identify good places to put groups of beehives (known as apiaries) on their land.

What makes a good apiary site?

- Bees need:**
- To collect nectar and pollen to sustain strong viable colonies. So a continuity of flowering plants is essential.
 - A clean water source close to the hive

- Hives should be:**
- Sited away from frost pockets
 - Sited away from public rights of way
 - Protected from prevailing winds
 - On well-drained sites, free from flooding
 - On sites free from over-hanging trees



www.defra.gov.uk

Department
for Environment
Food & Rural Affairs

Supporting document: additional
material on the proposed National
Strategy and actions

March 2014

Department
for Environment
Food & Rural Affairs

www.gov.uk

The National Pollinator Strategy: for bees and other pollinators in England November 2014



Pollinators and Pollination Services

STATUS AND VALUE OF POLLINATORS AND POLLINATION SERVICES



OUR ENVIRONMENT,

Breeze³, Prof. Simon

128 0GB, UK
1, Cowmarsh
28 6AR, UK;



Five simple actions

Whether people live in a town or in the countryside, they are being urged to help create or improve a habitat for pollinators in five simple ways:

1. Grow more nectar- and pollen-rich flowers, shrubs and trees
2. Leave patches of land to grow wild
3. Cut grass less often
4. Avoid disturbing or destroying nesting or hibernating insects
5. Think carefully about whether to use pesticides

The five simple actions were drawn up with experts from Natural England, the Food and Environment Research Agency, conservation charities and the research community.

There are at least 1500 species of insect pollinators in the UK. This includes 26 species of bumble bee, 260 solitary bees, 1 honey bee species and hundreds of types of hoverflies, butterflies and moths.

Defra will be publishing a national strategy for pollinators in the Autumn, following a public consultation earlier this year.

Bees' Needs video



Help provide pollinators with the food and habitat resources they require

Take care when using insecticides, and increase use of Integrated Pest Management





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Grandfather rights ending soon!

On the 26 November 2015, it will be a requirement for **everyone** applying for products (PPP) authorised for professional use to have a certificate of competence to purchase PPPs authorised for professional use if the intended end user does not have one.

The exemption for 'grandfather' rights will end. [Are you ready?](#)



Integrated Pest Management Plans

- 9,400 farmers
- 2.6 million hectares of UK farmland

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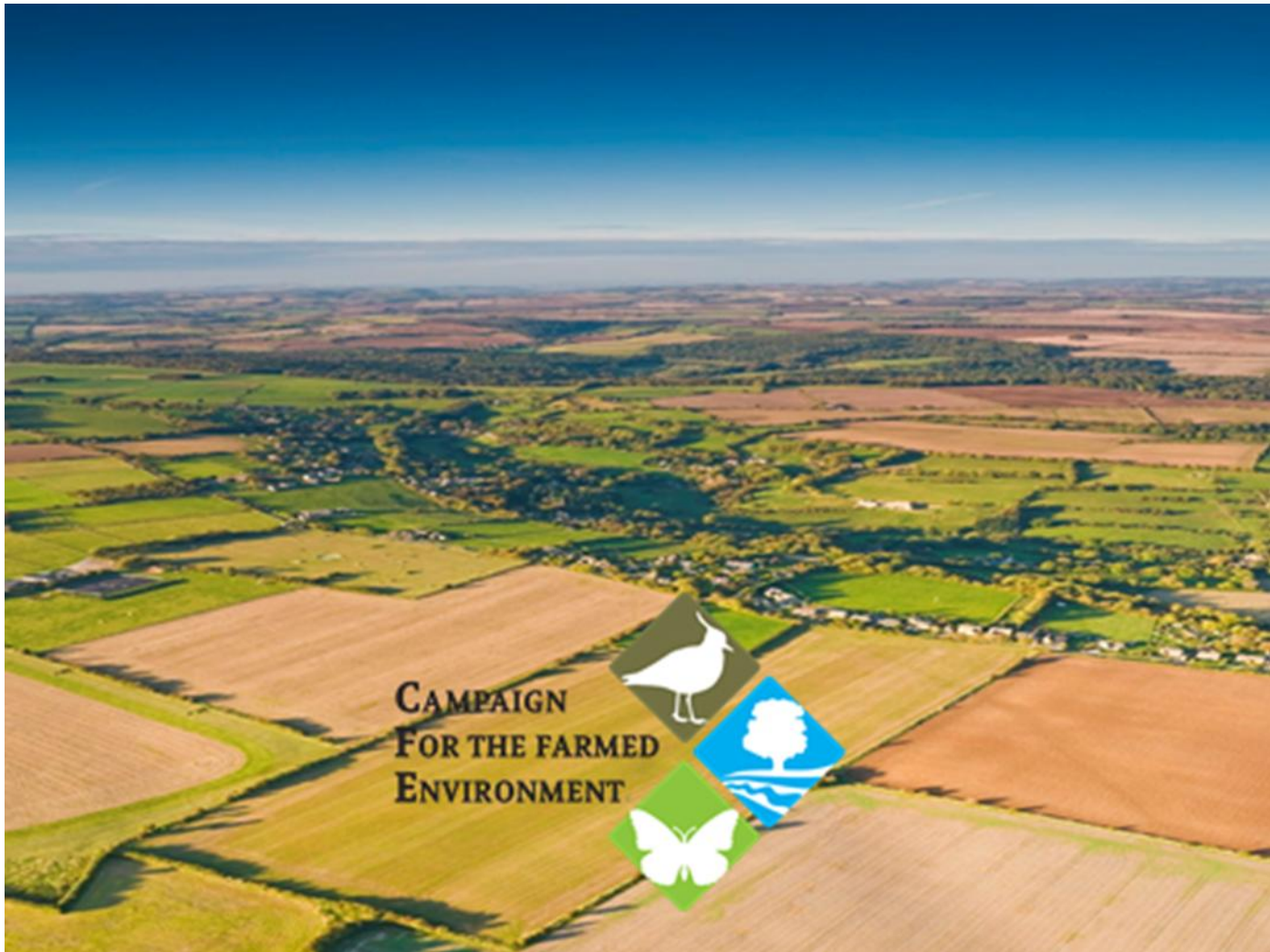
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CFE Overview: Who is involved?



CFE partnership:

- AIC, AICC, CAAV, CLA, GWCT, LEAF, NFU, Royal Society for the Protection of Birds RSPB, DEFRA, Environment Agency, Natural England, The Wildlife Trusts.

Audiences:

- farmers, growers, agronomists, advisers, agricultural supply trade



CAMPAIGN
FOR THE FARMED
ENVIRONMENT.



Why CFE?

Leadership

Ownership

Resilient growing & farming businesses



Campaign for the Farmed Environment (CFE)

- **2013 - 677,000ha unpaid CFE environmental measures benefitting pollinators (including nearly 2000ha each of wildflower mix, pollen and nectar mix, and flower-rich temporary grass)**
- **2014/2015 – over 70 CFE on-farm events / training days, reaching around 1500 farmers and advisers**

CFE Resources

CAMPAIGN
FOR THE FARMED
ENVIRONMENT.



Pollinator for your



CAMPAIGN
FOR THE FARMED
ENVIRONMENT.



Managing hedges to benefit pollinators



Hedges are often vital for healthy, diverse wild pollinator populations in farmland. Hedges attract and support pollinators, boosting their numbers. In turn, these pollinators move into fields and orchards to improve pollination of crops such as oilseed rape, legumes and fruits resulting in increased yields. They also increase the size of fruit produced by hedge plants and this provides winter food for birds.

This leaflet complements the Campaign for the Farmed Environment (CFE) guide *Pollinator management for your farm business*.

This guidance aims to help make the most of hedges on farm, including those counted as Ecological Focus Area (EFA), and so demonstrate farming's support for CFE and the National Pollinator Strategy. This guidance aims to help make the most of Ecological Focus Area (EFA) hedgerows and so demonstrate farming's support for CFE and the National Pollinator Strategy.

Why are hedges good for pollinators?

Healthy populations of pollinators need three things:



1. Good sources of pollen and nectar for food from spring to autumn.

- In early spring, willow catkins (pussy willow) and blackthorn flowers are especially important, when few other flowers are available. They are particularly valuable for queen bumblebees. Other shrubs and trees, including hawthorn (May blossom), crab apple, wild cherry and wild plum, provide rich pickings for many pollinators later in spring.
- In summer, flowers of hedgerow margins are important for pollinators, especially when crops are not in flower. Most crops only flower for a few weeks, but hedges can help meet pollinators' needs for the rest of the flying season. During droughts, flowers growing in hedges alongside ditches are the only ones available.
- In the autumn, ivy provides copious nectar and pollen.



2. Safe places to breed and overwinter

- Holes created by mice, voles and other animals at the base of hedges or in banks, together with tussocky grasses in nearby margins, provide excellent bumblebee nesting places. Open fields provide few such opportunities. Many solitary bees nest in holes in patches of short turf or bare earth in hedge banks, in hollow stems, e.g. dead bramble, or in holes in dead wood.
- Hedges provide an abundance of breeding habitat for a wide range of pollinators. For example, they provide food plants for butterfly and moth caterpillars, and the aphids or rotting vegetation upon which most hoverfly larvae depend.
- The same features provide safe places for pollinators to overwinter, as eggs, larvae, pupae or adults.



3. Safe flyways

- Few pollinators like moving across open country when looking for flowers or returning to their nests. Instead they follow linear landscape features like hedges, where they are sheltered from wind and rain, and safer from predators. This applies even to large insects like bumblebees.



hedgetink





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Pollinators

The CFE is helping pollinators on farms

Last updated: 16 Jul 2013

Contact us

CFE Programme Office
Agriculture House



Online Training Module: Pollinators

Your Contact Details

Completed by 132 farm advisers

| | |
|--------------------------|----------------------|
| Postcode* | <input type="text"/> |
| Contact telephone number | <input type="text"/> |
| Email address* | <input type="text"/> |
| Company | <input type="text"/> |

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pollinators can also improve crop productivity. Pollination is vital to the production of many horticultural and agricultural crops in the UK. This pollination is valued at £510m per year.

Managing Hedges to Benefit Pollinators

The Campaign for the Farmed Environment has produced a leaflet on managing hedges to benefit pollinators.

Download the leaflet from [here](#)



Campaign for the Farmed Environment (CFE)

- **2014 - seed for 443 ha of annual flowers**
- **2015 - seed for 450 ha of a spring-sown flower mix, 350 ha of an autumn-sown mix, and 200 ha of a field margin mix providing pollen and nectar**

Government agri-environment schemes

- > 140,000 ha of measures that have taken areas out of crop production, to create areas that benefits bees such as nectar and wild bird seed mixtures
- > 380,000 km of hedgerow, ditch and boundary measures that will also benefit pollinating insects



Thank you for your attention

Dr Chris Hartfield
Lead on bee health & pollinators
National Farmers' Union, UK

