# Boosting beneficial insects on farm with a whole-farm IPM approach

*Key points from webinar #2 in the series* ***Sharing farmer knowledge across the farming sector on ways to work with nature to reduce pesticide use,*** *Feb. 2022*

This webinar for farmers and agronomists focussed on **supporting pest predators that help manage the most common pests and disease vectors**. Expert speakers who shared their practical experiences were:

* **Entomologist Dr Dave George, Univ. Newcastle**, on the science of biological pest controls and habitat approaches to support beneficial insects.
* **Julian Gold**, **Hendred Estate manager, Oxfordshire**, on phasing out insecticides and replacing with natural solutions using beneficials on-farm.
* **Mixed farmer Angus Gowthorpe in the Vale of York** on managing insect populations in northern growing contexts, with 4 years’ now insecticide-free.

**Key points**

* You need to manage grassy margins or floral strips almost as a ‘crop’ but at least some of the costs can be covered by relevant options under Countryside Stewardship subsidy.
* There’s no ‘best’ method or combination for floral strips or intercropping- you need to find out what works best for your farm.
* Not all standard floral resource commercial seed mixes work well for natural enemies, as they’re often blended with pollinators in mind.
* There’s no immediate ‘profit’ from boosting beneficials so view it as a short-term investment for longer term benefits and future-proofing, especially for insecticide resistance problems.

***A. Putting the science behind habitat for beneficial insects into practice***

To ‘capture’ the economic value of natural pest control, we need to develop habitat and cropping practices that can support these beneficial insects throughout their life cycle. Large scale, monoculture systems don’t do that well, often because natural enemies also need floral resources, e.g. adult hoverflies need to feed on pollen before they can lay eggs.

Even for groups like ladybirds which feed on prey as larval and adult stages, they will also benefit from resources you don’t find within the crop. Floral borders can help them live longer and produce more offspring, adding to your natural pest control service.

Flowering plant borders are one way to help fill those resource gaps but it’s not as simple as just sowing some seed- not all floral mixes are created equal and care needs to be given on species to select or avoid for your farm context. Knapweeds, for example, while great for pollinators, can be a good food source for Cabbage White (Pieris spp.) caterpillars. See [AHDB factsheet](https://www.agricology.co.uk/sites/default/files/08_15%20Flower%20power%20making%20the%20most%20of%20flowering%20seed%20mixes.pdf) on *Flower power: making the most of flowering seed mixes.*

Position of flowering strips is also important- the further the distance from the crop, the less pest control function they can deliver so including some strips within-field can be very useful, as can providing overwintering habitat nearby for predatory insects.

Diversifying fields by companion cropping or undersowing can also help with pest control, either directly by boosting natural enemy levels and/or by helping to ‘dilute’ the crop within the field landscape, making it harder for pests to find their food source. See the recent [EU DIVERSify project videos](http://plant-teams.org/video-portfolio) from 5 years’ study of effective ‘plant teams’.

***B. Why complicate nice, simple industrial farming with biodiversity and beneficials?*** For Julian, the most obvious answer was: the sprays don’t work anymore, but also his personal eureka moment when he got a beehive and realised the importance of ecological systems. He now ‘maintains the premises’ for beneficials with 2 simple approaches:

**(a) just don’t spray against pests-** especially with loss of neonicotinoids and now so much resistance to pyrethroids. Plus you don’t want to upset your beneficials with insecticides.
**(b) build more biodiverse systems.** He’s used classic floral field borders but also took part in the [*ASSIST*project](https://assist.ceh.ac.uk/) trying out extra floral strips 3 tramlines (90m) apart down each field, so beneficials only need to travel 45m to do some pest control.

Does this work economically? His experiment showed almost zero slug damage in oilseed rape in the treatment field with the added in-field strips, compared with fields with only border strips or no strips. Researchers found large ground beetles (devourers of slugs) were more abundant when in-field strips added. The data can’t prove that they were keeping the slugs in control but he only needed one small, treatment with ferric sulphate pellets with the in-field strips, compared with 3 full treatments on the other fields.

Assessing build-up of natural enemies could give people the confidence to back away from threshold spraying and give the beneficials a chance to act.

***C.*** ***Farming with Nature for soil health, field diversity and a home for beneficials***Angus’ approach to regenerative farming, no-till for many years, integrates:

* Minimal soil disturbance, with soil ‘armour’ of living plants or residues
* Long and diverse rotation (7 crops now) and different cover crops
* Grazing livestock on the arable fields
* Context -the right plant in the right place

His conditions in NE England are different to southern research sites so he’s had to refine techniques to suit his farm. He moved away from rye grass for his sucklers to herbal leys, mob-grazed, which encourages constant flowering. This achieves flowers in bloom for 9 months of the year via leys, floral strips and nature areas.

Angus has not sprayed any insecticides for 4 years, including any seed treatments, and minimises fungicide use (just one application on one crop in the last 2 years), via good biology and plant nutrition. He hopes his grassy margins and floral strips are cost-covered medium-term by subsidies, plus savings on insecticides. Margins also serve as LERAP watercourse protection buffers so deliver multiple benefits. He’s now part of a [Field Lab ‘Flowering Habitats for Pest Control’](https://innovativefarmers.org/field-lab?id=ff1dd8f4-f92f-ec11-8198-005056ad0bd4) to boost pollinators and natural enemies, for cabbage stem flea beetle, aphids and bruchids in particular.

Webinar recording is available via: <https://www.agricology.co.uk/sharing-farmer-knowledge-across-farming-sector-ways-work-nature-reduce-pesticide-use>

These webinars are part of a project to share farmer knowledge across the farming sector on ways to work with nature to reduce pesticide use. The project partners are RSPB, The Soil Association, Nature Friendly Farming Network, Pesticide Action Network UK, and CoFarm Cambridge.

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