#  ****IPM in field horticulture****

*Key points from webinar #4 in the series* ***Sharing farmer knowledge across the farming sector on ways to work with nature to reduce pesticide use,*** *Mar. 2022*

This webinar for farmers and agronomists focussed on practical methods for managing pests, diseases and weeds in field-grown vegetables and fruit with zero or very limited use of pesticides. Expert speakers who shared their experiences were:

* **Carolyn Coxe**, Managing Director of Green Grow Consultancy and horticultural advisor at the [*Soil Association*](https://www.agricology.co.uk/node/208), explained how to reduce reliance on pesticides in commercial horticulture and address challenges and opportunities, from her experience as a grower and advisor and recent collaboration with Innovative Farmers Network.
* **Peter Wrapson** and **Dominic Walsh**, farm managers for [CoFarm Cambridge](https://www.cofarm.co/cambridge), described how they go about producing vegetables using innovative non-chemical alternatives to pesticides in this thriving pilot community farm set up with local people during Covid lock-down.

**Key points**

* It’s all about trying to create habitats where beneficial groups will come in of their own accord- a balanced ecosystem can deal more effectively with pest problems
* Start your IPM strategy from the beginning by planning your overall cropping -which rotations? which habitat features?- and then your individual field plans
* Manage all the tools in your IPM methods box! Each season is different, it’s complex and what worked last season won’t necessarily be the best tactic for this season. Be proactive with very regular field monitoring for the best decision making.
* Talk to and educate customers/buyers about occasional presence of natural enemies in fresh produce, explain the good work they do and the pesticide reduction benefits.

 ***A. Practical IPM methods for commercial scale field vegetables***Tools and support for decision making are essential, to help you work out what is your tolerance level for specific pests or diseases? This will depend on each growing season’s conditions, the specific crop, the plant growth stage and your customers’ requirements- do you perceive there will be a yield/quality penalty if you don’t take action now? Things can very quickly change or start to go wrong in horticulture, you need to be examining your crop at least weekly, preferably every 2-3 days.

There are useful monitoring tools beyond just ‘eyeballing the crop’ – tissue analysis checks whether your crop has a healthy balance of nutrients, which will help it manage better against pests and diseases. Pitfall trapping along field borders and at different distances into the crop give you a good idea of how far predators, e.g. ground beetles, are moving into the crop and whether you need to add habitat corridors in larger fields, e.g. grassy beetle banks.

Crop covers, e.g. narrow gauge mesh versus aphids, are expensive but they are re-usable and we see good benefits from using them but it can get very hot underneath so be careful when plants are at delicate growth stages or flowering. Fleece early in the season is used to bring the crop on when it’s still cool but also helps keep out aphids and cabbage root fly.

Biopesticides are increasingly used, e.g. Flipper, a fatty-acid based contact product, but these do require careful and well-timed application to work well. You also need good coverage, i.e. apply at a higher water rate. Unlike many chemicals, biopesticides have no quick ‘knock-down’ effect, they work more slowly by disrupting the pest’s life cycle, so you must apply them earlier, at first sighting of targeted pests, and in a cleverer way.

Commercial beneficials can be introduced or you can encourage them on a natural basis – it’s good to find out what your baseline populations are. Make sure that they will have plenty of food and habitat resources, especially when overwintering, where relevant. Bear in mind that there is always a time lag between pest levels rising and predator levels catching up with them. You can try to minimise this control lagtime by providing habitat for good population levels and by applying a biopesticide if/when needed.

Make use of excellent resources out there- AHDB’s Encyclopaedia of Pests & Natural Enemies, BASIS Classroom webinars, relevant Field Lab results and blogs from Innovative Farmers, Syngenta/AHDB pest and disease forecast network.

***B. Nature-friendly IPM in vegetables and fruit at Co-Farm,*** ***Cambridge***This 2.8ha pilot is the first of its kind in the UK, aiming to grow food organically with local volunteers but also educate people about production and food systems, as well as providing social and environmental benefits and serving as a mini-nature reserve within city limits.

Taking over ragwort-infested former arable land, with very poor soils, the first tasks were to add lots of organic matter, hand pull the weeds and plant hedgerows, the orchard and meadow areas and create small ponds. The farm now has field borders of 17 flowering plant species, grown on-site from seed, and makes use of cover crops of vetches, berseem clover, buckwheat and Phacelia green manure. These serve multiple functions of improving soil health, boosting biodiversity and providing abundant and varied habitat patches for natural enemies of pests. They’ve found that growing vegetables in modules helps produce strong, healthy seedlings better able to withstand pests and diseases and cope with the rich seedbank they inherited.

‘People power’ of up to 20 volunteers per day at summer peaks, enables many person-hours for hand weeding, careful and regular crop inspection, some hand removal of larger pests and attention to maintaining effective mesh and other physical barriers for different insect, bird and mammal pests. All brassicas are covered with butterfly netting of a mesh gauge that excludes *Pieris* species but allows hoverflies in, for pest control. Finer mesh is used on carrots and leeks to reduce carrot and Allium leaf fly levels respectively.

Extra biological controls are sometimes introduced or encouraged right into the crop, e.g. green lacewings, the only species which overwinters, are placed on brassicas underneath the netting and lacewing boxes with male pheromone lures to attract females and give them overwintering quarters so that they are already in the crop when the first whiteflies emerge. They also use 2-spot ladybirds and plan to introduce *Encarsia* parasitic wasp and *Phytoseiulus* predatory mite for red spider mite control in the polytunnels.

Training volunteers (many of whom were complete novices) about how cultural practices and natural enemies help with pest and disease control is important, e.g. leave any brassica leaves with lots of parasitic wasp cocoons in place, to maximise their populations; sow carrot thinly enough you don’t need to thin later, as the smell of crushed leaves and exposed rootlets will attract carrot fly, and be careful to avoid bruising the foliage as you pull carrots at harvesting, for the same reason.

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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