

# P2007349: Assessment and analysis at AHDB Strategic Cereal Farms

## Strategic Cereal Farm West: Work package 6 – Flower strips

### 6.1 Trial background

Previous AHDB research has found that flower strips attract a range of insects that are beneficial for pollination. Within arable crop production, margins of pollen and nectar flower can be used to increase numbers of pollen and nectar feeding insects. In 2004, AHDB published research that non-crop habitats constitute one of the most important sources of biodiversity within farmland. In many arable areas, field margins are the only major non-crop habitat, acting as the main source of beneficial species, and it has been recognised for some time that field margins can play an important role in the development of novel manipulation techniques to enhance insect predators and parasitoids.

The Strategic Cereal Farm West trial was established to test the extent to which the results found in research trials are also seen in a commercial farm system and to demonstrate the integration of flower strips into a farm business.

**Trial aim:** To determine the impact of perennial flower strips on the abundance and distribution of beneficial insect and pest populations, within the flower strip and within the arable crop.

### 6.2 Trial design – multiple fields

In May 2019, a seed mix was sown to establish flowering strips in two fields at the Strategic Cereal Farm West (Figure 6.1). In one field, strips were established around the edge of the field, and in the second field strips were established around the edge of the field, and within the arable crop. A third field has been selected as a control treatment, where no flower strips have been established. The field characteristics are provided in Table 6.1.

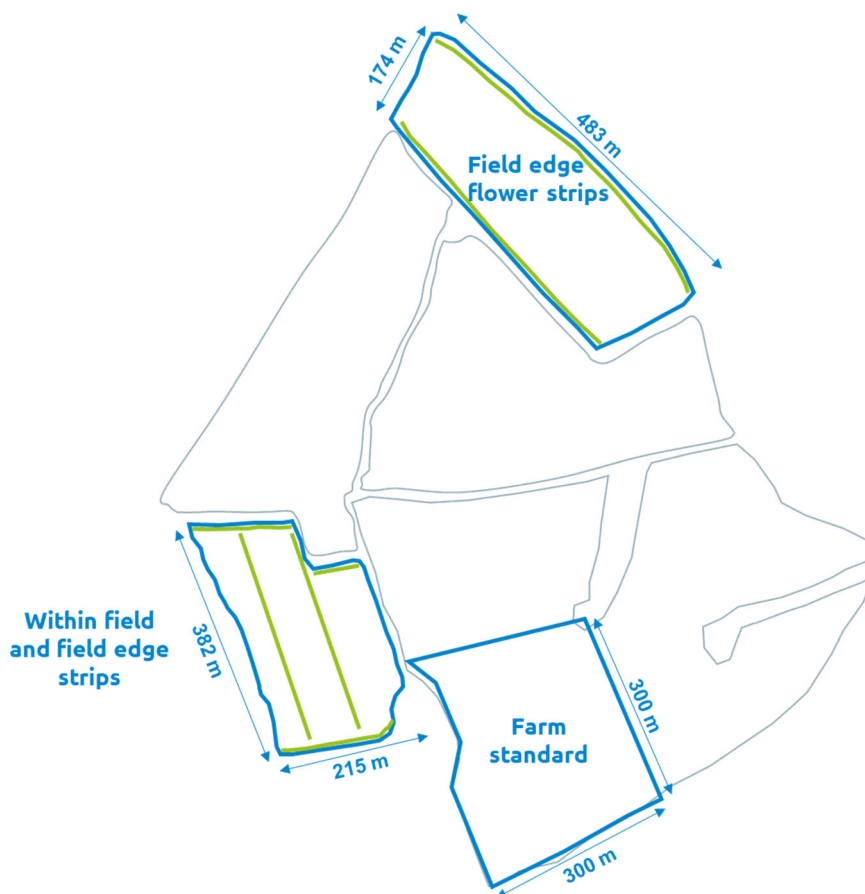
The seed mix contained:

- *Achillea millefolium* Yarrow
- *Anthriscus sylvestris* Cow parsley
- *Centaurea nigra* Common knapweed
- *Chaerophyllum temulum* Rough chervil
- *Daucus carota* Wild carrot
- *Echium vulgare* Viper's bugloss
- *Geranium pratense* Meadow cranesbil
- *Knautia arvensis* Field scabious
- *Lathyrus pratensis* Meadow vetchling
- *Leontodon hispidus* Rough hawkbit
- *Leucanthemum vulgare* Oxeye daisy
- *Lotus corniculatus* Birdsfoot trefoil
- *Pastinaca sativa* Wild parsnip

- *Prunella vulgaris* Selfheal
- *Pulicaria dysenterica* Common fleabane
- *Silene dioica* Red campion
- *Stachys sylvatica* Hedge woundwort

**Table 6.1 Treatments and field characteristics of flower strips trial at Strategic Cereal Farm West**

Treatment name:	Farm standard	Field edge flower strips	Within field and field edge flower strips
Field numbers:	42	40	43
Field size (hectares):	32	9	7.5
Soil type:	Clay	Medium, very heavy	Medium
Harvest 2019 crop:	Spring barley/ oilseed rape	Oilseed rape	Oilseed rape
Harvest 2020 crop:	Spring barley	Spring barley	Winter wheat
Harvest 2021 crop:	Winter wheat	Winter wheat	Winter wheat



**Figure 6.1 Flower strips trial layout at Strategic Cereal Farm West. NB distances provided are a guide and may not be exact**

### 6.3 Assessments

It is difficult to draw robust conclusions from monitoring for pests and beneficials at a field scale. Therefore, proposals should design a farm scale-monitoring programme that includes the trial fields and the treatments within them.

The assessments listed below are intended as a guide, and proposals in this current call should look to build a dataset to enable benchmarking of invertebrate groups between fields and between years. In 2019, slugs and summer aphids and their natural enemies were identified as the key species to monitor.

Assessments should be completed using a sampling methodology which take account of the trial design and field characteristics, for example, variation in soil type, trial focus and are appropriate to generate robust data to complement an on-farm demonstration. Proposals should consider the aim of the Strategic Farms which is to test research in a commercial situation and provide farmers with practical ways of conducting their own on-farm testing and assessments.

Key pest species in cereals have been identified using the [AHDB Encyclopaedia of pests and natural enemies in field crops](#) and include, but are not limited to: wireworms, leatherjackets, slugs, aphids, wheat bulb fly, orange wheat blossom midge, gout fly and frit fly. Natural enemies should include predators of key pest species.

- Weeds
  - Appearance of weeds in the flower strip
  - The movement of weeds or sown species into the crop
- Pests and natural enemies, for example slug traps and pitfall traps at crop emergence and assessed 2 weeks later. Pitfall trap content identification to functional group plus common species
- Flowering strips species composition
- Carbon sequestration/mitigation potential of flowering strips
- Soil carbon in cropped areas
- Yield
  - Field 43 (within field and field edge flower strips) arable crop yield map data analysed to determine i) whether there is any significant impact on yield adjacent to the in-field strips compared with areas further away from the strips, and ii) the field scale impact on yield of removing land from production to install in-field strips