

The value of planting arable field margins

How arable field margins can benefit the environment and crops

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Arable margins support biodiversity by providing habitats for wildlife to live, feed and overwinter in. The margins carry important populations of beneficial insect predators, such as ladybirds, ground beetles and spiders. Predatory insects within the margin can migrate into the main crop and feed on pests (eg aphids).

A potential reduction in aphids can, for example, lower levels of barley yellow dwarf virus (BYDV) or other disease pressures in a crop, which may curtail yield losses from both BYDV and direct feeding by aphids. Thus margins can be an element in an integrated pest management (IPM) strategy.

Arable margins also provide pollen and nectar resources to a variety of beneficial insects, such as hoverflies and parasitoid wasps. Marmalade hoverflies, for example, feed on pollen as adults, but the larvae are predators of aphids. The adults of many parasitoid wasps feed on pollen and nectar, but lay eggs in aphids. The larvae subsequently consume the aphid. Flower-rich arable margins also support solitary bees and bumblebees, which provide crucial pollination services. Butterflies also benefit from access to flower-rich margins.

The value of arable margins is recognised by their inclusion in the Green Low Carbon Agri-environment Schemes (GLAS). Although the positive role of non-cultivated habitats for natural enemies has been highlighted, relatively little is known about their actual role in the control of pests, and how the delivery of pest control services differs in relation to the composition and management of the arable margin. There are also some concerns that arable margins could harbour undesirable species and act as a source of disease and aphids to the next cereal crop.



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Research study

The potential benefits and risks of arable margins are being investigated in a collaborative PhD study between Teagasc, University of Edinburgh and the Scottish Rural College. Differing mixtures of plant species (ranging from grass-dominant mixtures, to those containing native wildflowers, to natural regeneration) are being investigated on experimental and commercial farms. Predator, pest and disease assessments of margins and hedgerows are being undertaken. The adjacent crop is also being assessed for beneficial insects, pests and disease, along with yield measurements

to determine any impact of the insect population migrating into the crop from the margin.

Findings from this project will help inform future policy in relation to the establishment and management of arable margins, thus supporting sustainable agricultural systems.

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