



New Project

FV 334a

Automated Field Margin Design for vegetable crops

Project Number: FV 334a

Title: Automated Field Margin Design for vegetable crops

Start and end dates: 1st April 2011 to 31st March 2013

Project Leader: Dr. Pat Croft, STC Research Foundation

Industry Representative: Richard Moynan

Location: STC Research Foundation

HDC Cost: £ 21,500

Project Summary:

The horticultural industry faces a range of issues linked to crop protection. These include a reduction in the available products approved for use, the potential for increasing resistance in the target organisms, increasing pressures from consumers and retailers for residue-free produce and a need to comply with legislation and industry initiatives. These pressures have resulted in the need for a more integrated approach to pesticide use and for the full exploitation of alternative methods available for maintaining pest populations below economic damage thresholds. Non-crop vegetation in agricultural landscapes can provide a range of important ecological services. If carefully designed, it is even anticipated that combined biodiversity and pest-control benefits can be realised from flowering field margins, providing growers with a direct economic benefit in addition to expected subsidies from Agri-Environment Schemes (AES).

Nevertheless, figures from Natural England show that uptake of floral field margins

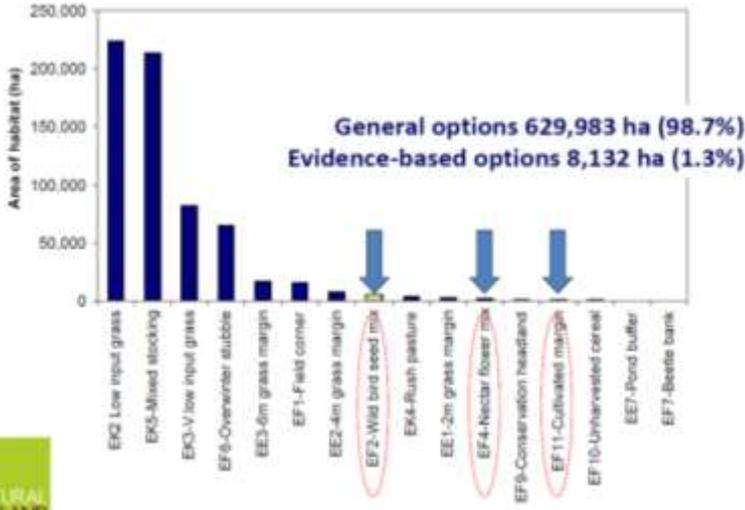


Figure 1. Uptake of General vs Evidence based options in AES. Flowering margin options are included in evidence based options, where areas planted for insects in 2009 totalled 6,500ha. Figure originally presented by NE.

has been traditionally poor in AES, with growers preferentially adopting options without a flowering component (Fig. 1). Unless this trend can be rectified, growers are unlikely to benefit from the combined conservation-pollination-pest control services that flowering field margins could otherwise provide on a widespread scale. Following discussions with growers, it appears that the primary reasons for this lack of uptake are poor establishment of general flower mixes and a lack of

benefits to the grower besides AES income and increased conservation value, the former of which can be obtained through more reliable options. The short term longevity of many mixes, which are often composed primarily of annual plants, has also been noted as a deterrent.

Growers are therefore more likely to implement flowering field margin options (e.g., in Stewardship Schemes) if these can be designed to fit with their individual cropping regimes and specifically developed to provide optimal and multiple benefits, particularly where these include pest control in conjunction with pollination and conservation. Should an automated system be available, whereby growers and/or agronomists could be provided with details of field margin seed mixes best suited for their individual cropping regime, requirements and budgets, it is likely that uptake of both annual and perennial flowering margins would be greatly improved.

Aims & Objectives:

(i) Project aim(s):

To develop a user-friendly program capable of generating site-specific annual/perennial multifunctional field margin seed mixes for use around multiple UK vegetable crops.

(ii) Project objective(s):

- a). To develop an on-line system capable of translating information on multifunctional field margin seed mixes based on simple criteria as provided directly by a grower/agronomist, e.g. cropping regime, soil type, budget and preferences for an annual vs perennial field margin.

Other optional preferences, e.g. for inclusion of native-only plants, or for emphasis on pest control, provision for pollinators, etc, would also be built into the system. Such criteria would include, but would not be restricted to:

- Resource provision for target beneficial groups including farmland birds, pollinators and pest natural enemies, where such resources will include both food and habitat elements.
- Associations between plants and pests of the selected crops (brassicas, carrots, peas and potatoes).
- Cost of seed.
- Establishment likelihood.
- Environmental ranges (soil pH, drought, flooding, etc).
- Flowering season.
- Disease vector capacity.
- Weed status.
- Provenance (i.e. native/naturalized/introduced)

The system would utilize multiple sources of information to generate a detailed prescription of annual and perennial flowering field margin plants. In addition

the project would identify gaps within the database generated and aim to address these through literature review.

- b). The project would include consultation with growers ensuring the development of a user-friendly interface between the database and the grower. The package will provide growers with a system that will provide an output of a margin mix that suits the criteria entered by the grower.
- c). In order to increase project awareness, uptake and successful implementation at the field stage (i.e. margin sowing and management) a Factsheet will be produced. This will provide potential end-users with a background to the project and feature 'best practice' guidelines to assist growers in successful margin establishment and maintenance. It is envisaged that this Factsheet will be distributed both through the HDC and at various events to be attended as part of projects' promotion.

Further information

Email the HDC office (hdc@hdc.ahdb.org.uk), quoting your HDC number, alternatively contact the HDC at the address below:

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