

Grass Margins and Beetle Banks

ISSN 0142 7695

ISBN 1 85482 718 6

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Introduction

With the decline of undisturbed tussocky grassland on many farms and an increase in field size, there has been a corresponding loss of invertebrates and other species of wildlife on farms. Recent research has shown just how important grass margins around the edge of arable fields and across the middle of large fields (referred to as Beetle Banks) can be.

The re-creation of grass margins can result in relatively rapid colonisation by beneficial insects such as ground beetles and spiders, which prey on crop pests such as aphids. The grass margins also provide valuable habitat for other declining farmland wildlife, such as grey partridge and barn owl.

Grass margins are inexpensive, easy to establish, and require very little maintenance.



Figure 1. A beetle bank

Establishment

Choice of Site - grass margins should be established where they will have most benefit. This would include alongside hedges and watercourses to add to the habitat mosaic and also act as “buffer strips”. Where possible grass margins should be linked to create a network of wildlife corridors around the farm. It is recommended by the Game Conservancy that Beetle Banks are established across the middle of arable fields larger than 20ha.

In some instances farmers have created Beetle Banks along the line of electricity/ telephone poles to avoid awkward cultivations.

Site Preparation - sites with a heavy weed burden should be sprayed with an appropriate herbicide in late summer. The site should then be ploughed to create a ridge approximately 0.2m - 0.4m high. The width of the grass margin can vary, but is usually between 1.5m - 6.0m wide.

The width of the field margin will depend to a certain extent on whether it is funded through an agri-environment scheme, carried out as part of set-aside (e.g. 10m wide strips alongside permanent water courses) or undertaken outwith a scheme.

A gap should be left at either end of the ridge if it is a Beetle Bank to enable the field to still be worked as one unit.

Choice of Seed - as it is the tussocky structure of the grassland which is important to spiders and beetles, it is advisable to use Cocksfoot grass. This is usually used in conjunction with another species such as Yorkshire Fog or Creeping Red Fescue.

Sowing - the grass strips should be drilled by machine either in the autumn or in the spring. The seed should be sown at 35kg-40kg/ha (3.5g-4.0g/m²). This should result in a dense sward, able to blanket out weed competition.

Early Management - in the first year it may be necessary to top the margins to control the establishment of annual weeds. This will also promote tillering of the grasses. If perennial weeds become a problem (e.g. nettles, creeping thistle), it may be necessary to use a suitable selective herbicide to take them out. If the margins have been created as part of an agri-environment scheme, you should always obtain permission from SEERAD before topping or spot spraying.

Wildflower and Grass Margins - Grass margins can also be created to include wildflowers such as knapweed, ox-eye daisy, field scabious etc. These margins are excellent for butterflies and other insects, and are of high amenity value. They need to be established and managed in a different way to tussocky grass margins, and SAC Technical Note T275 Wildflower Grasslands should be referred to.

Long Term Management

In general, the grass margins and Beetle Banks will require very little management. In order to encourage tussocks, and therefore large numbers of invertebrates, the margins should not be cut.

In order for the margins to remain weed-free, it is essential to protect them from herbicide drift and fertilisers. Grass margins damaged by herbicide drift are likely to be invaded by weeds such as cleavers and creeping thistle. It is equally important to prevent soil being thrown onto the margins during ploughing, as bare soil is likely to encourage weed development.



Figure 2: *Asaphidion flavipes* photographed by E. McCall and provided by SAC Conservation and Ecology Department.

Benefits

Beneficial Insects - research carried out by the Game Conservancy and Southampton University has shown that the number of predatory beetles and spiders can rapidly increase in the grass margins, reaching densities in excess of 1000 per square metre. They over-winter in the grass strips and move out into the crop in the spring to prey upon crop pests such as aphids and can reduce the need for insecticide use.

Farms with little or no suitable over-wintering cover will be lacking in crop pest predators. As the ground beetles and spiders do not fly, it takes them a long time to recolonise areas in the spring. The creation of Beetle Banks across the middle of fields ensures that the crop pest predators over-winter in the middle of the field and therefore are easily able to move into the crop to feed on aphids and other crop pests at an early stage.

Weed Control - where weeds associated with bare/ disturbed ground, such as cleavers, are a problem, the establishment of dense grassy margins can provide an effective barrier to prevent the ingress of weeds into the crop. Savings can be made on time and money spent spraying out weedy field margins each year, which only succeeds in perpetuating the problem.



Figure 3: A grass margin alongside a hedge.

Buffer strips - grass margins can be used to help protect field boundary habitats (including water courses) from damage associated with farming operations. They could be used to meet requirements of LERAPs (Local Environmental Risk Assessments for Pesticides). Grass strips, if sited along the contour, can also be used to reduce soil erosion on sloping ground, and conserve valuable topsoil.

Wildlife - a wide range of wildlife can benefit from the creation of tussocky grass margins. In addition to the beneficial insects (which in turn can provide a valuable source of food for many farmland species) grey partridge, small mammals, owls, kestrels, skylark, butterflies (e.g. meadow brown), pheasant and many other species can benefit from feeding opportunities, cover and nest sites provided by grass margins.

Shooting - grass margins can be used to encourage partridge and pheasant, and therefore enhance a farm shoot.

Costs

The Game Conservancy estimates that the cost of establishing a 2m ridge, 400m long will be less than £80, including cultivation, seed and loss of crop. In subsequent years the cost will be less than £30 per year.

The seed itself is relatively inexpensive (£1 - £2.50 per kg) and there may be incentives available to offset crop losses - refer to next section.

Incentives and Grant Aid

Agri-environment Schemes - at the time of writing, payments of £736 per ha per year are available under the Rural Stewardship Scheme (RSS) operated by SEERAD.

AAPS - at the time of writing AAPS allows for up to 2m of uncultivated ground to qualify for AAPS payments. This is measured from the edge of the field (e.g. fence line or centre of a hedge), and it is important to measure accurately as payments will be forfeited on margins in excess of 2m.

This allowance provides an ideal opportunity to create tussocky grass margins around field boundaries, although Beetle Banks, across the middle of fields, would not qualify.

Set-aside - Tussocky grass margins could be created on set-aside land. As from 2000 the 10m margins allowed alongside permanent watercourses provide an ideal opportunity to create valuable habitat and protect watercourses from farming operations.

The information contained in this Technical Note is largely based on work carried out by the Game Conservancy and Southampton University.

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