



## Grassy field margins enhance soil biodiversity

**Grass strips at field margins** are almost as valuable as hedgerows in encouraging diversity of soil creatures, according to new research. Six metre wide margin strips increase the number and variety of species such as earthworms, woodlice and beetles, and may act as corridors between isolated habitats.

**The study analysed** the presence of invertebrates of three main feeding types – soil ingesters such as earthworms, litter consumers such as woodlice and millipedes and predators like centipedes. Using soil samples, the numbers of rare and common creatures in fields with and without grass margin strips were compared with levels in other habitats on the same farm including winter-wheat fields, woodland, hedgerow, pasture and set-aside land. Rare species included the millipede *Polydesmus coriaceus* and the rove beetle *Lamprinodes saginatus*.

Establishing grassy strips at the edge of arable fields is popular in European agriculture. For example, around 33,000 hectares of grassy strips were in place by 2004 in England under the Countryside Stewardship Scheme<sup>1</sup>. These semi-natural habitats have a recognised value for species such as birds, bees, butterflies, small mammals and beetles, but less is known about the biodiversity of soil-dwelling creatures, which play an important role in soil ecosystems. A diverse range of species that consume leaf litter, such as woodlice, means organic matter is broken down more quickly, naturally improving soil fertility. Predators found in these margins may also function as a natural form of pest control.

The impact of grass strips on biodiversity on a 2630 hectare mixed arable farm in Southern England, was evaluated to find:

- The number of species unique to the grassy strip habitat
- The amount of species turnover (beta diversity) between the grass strips and the other habitats
- The distinctiveness of species assemblages in the grass strip habitat

The most diverse habitats were found to be hedgerows with 69 species, followed by grass strips with 59 species. Of the 59 species found in grass strips, 13 - or ten per cent of the total soil-dwelling species list for the farm - were found only in these field margins. These habitats are therefore an important source of biodiversity within the farm.

Additionally, of these 59 species, 26 were represented by a single individual. Grass margins may therefore benefit rare species, or enhance species dispersal by acting as corridors between isolated habitats.

Although environmental conditions in the grass strips were similar to other cultivated habitats, in terms of soil pH and soil temperature, for example, their value to soil biodiversity approaches that of hedgerows. The findings support the inclusion of grassy margins in agri-environment schemes.

1. See, for example: <http://www.naturalengland.org.uk/ourwork/farming/funding/closedchemes/css/default.aspx>

**Source:** Smith, J., Potts, S. and Eggleton, P. (2008). The value of sown grass margins for enhancing soil macrofaunal biodiversity in arable systems. *Agriculture, Ecosystems & Environment*. 127(1-2):119-125.

**Contact:** [joans2@nhm.ac.uk](mailto:joans2@nhm.ac.uk)

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