

Science for Environment Policy

Farmers with experience of agri-environment schemes develop more wildlife-friendly habitats

Researchers have found that farmer experience, concerns and motivation influence environmental outcomes for agri-environment schemes (AES), in a study in southern England. Farmers with more environmental-management experience and/or concern for wildlife created habitats that provided more pollen and nectar for bees and butterflies and winter seed for birds. The results suggest that supporting environmental learning among farmers may increase the success of AES.

Agri-environment schemes (AES) provide farmers with financial incentives to adopt wildlife-friendly management practices. Despite considerable expenditure — the EU allocated a budget of €22.2 billion for AES from 2007 to 2013 — a number of studies have highlighted variable success rates of AES in terms of providing environmental benefits.

Limited farmer engagement with the aims of AES is one possible reason for the limited success of some schemes. In this study, researchers examined the associations between farmer experience and environmental understanding, as well as landscape and local environmental factors, and the biodiversity and habitat benefits of AES in England.

The [Environmental Stewardship \(Entry Level Stewardship – ELS\)](#) scheme, a type of AES in England, gives farmers the option of sowing selected plant species at field edges to provide habitat for species of conservation concern. Options include planting nectar- and pollen-rich plant species for bees and butterflies, and seed-bearing species for farmland birds. This study assessed variations in the habitats created on farms participating in this scheme in relation to social, ecological and environmental factors.

The study looked at 48 arable and mixed farms in southern England, including an even mix of the nectar- and seed-rich habitat enhancements. The researchers assessed the quality of created habitats in terms of the availability of nectar, pollen and winter-seed resources. The number of flowering heads (clusters of flowers) as well as bumblebee and butterfly numbers were recorded within the nectar-rich habitats, while seed resources and bird activity were measured in the seed-rich habitats. As a control, nearby field edges not planted with nectar-rich or seed-rich species were also measured for habitat quality and species of conservation interest.

Interviews explored farmer attitudes towards, and history of, environmental management and their perceptions and understanding of the management requirements for providing nectar- or seed-rich habitats. The researchers used the interviews to establish three categories of farmer attitude to and commitment to agri-environment schemes:

- **Experience:** this described the farmer's history of environmental management, both in and out of formal schemes.
- **Concerns:** these were farmers' perceptions of how easy it would be to meet the requirements for creating and managing the habitat (e.g. establishing the plants).
- **Motivation:** this categorised the farmers in terms of their stated motivation for where they placed the strips on the farm, from more wildlife focused to more pragmatic.

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In addition, the surrounding landscape and habitat present on each farm was mapped using [land cover data](#) from the [Centre for Ecology and Hydrology](#). The influence of weather was assessed using data from the [British Atmospheric Data Centre](#), and national species lists were referenced to determine the species potentially present within the farmland.

The surveys indicated that the abundance and richness of birds, bumblebees and butterflies was higher in ELS field edges compared to the control fields.

These outcomes were influenced by a range of factors, including surrounding local habitat, weather conditions and species present in the area. Some of these factors cannot be controlled by farm management and can partly explain the high variability in success of AES. However, the researchers also found that the quality of the created habitats was affected by each farmer's experience, concerns and motivation: higher floral and seed resources were found in farms where farmers had more experience of agri-environmental management. In addition, there was a greater number and diversity of bumblebees on farms with more experienced farmers, and more butterfly species when farmers had sufficient knowledge to place their enhanced field edges in locations best for wildlife. The fact that farmers with greater experience were more successful in creating wildlife-friendly habitats suggests that farmers learn while implementing AES.

Farmers with more concerns about wildlife, rather than practical motives, were shown to produce higher flower numbers, but the opposite was found for weight of seeds in a wild-bird seed strip. Interestingly, farmers who had predicted greater problems with establishing and maintaining these wildlife habitats produced habitats with a greater seed yield.

The researchers suggest that working with farmers, actively engaging them or enabling them to develop skills in environmental management through advice and training, might improve the success of AES.



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