

Science for Environment Policy

Farmland biodiversity monitoring costs estimated

Monitoring biodiversity on farms is vital for conservation policies but how much does it cost? In a new pan-European study, researchers develop a standardised monitoring programme and estimate it will cost an average of €8 200 per farm to conduct. This cost could be dramatically cut if volunteer 'citizen scientists' or farmers help gather data for the programmes.

Monitoring programmes have been shown to make [biodiversity](#) policies more effective. However, there is a lack of systematic information on their costs. This study – partly-funded by the EU [BioBio](#) project¹ – carried out a monitoring programme on 192 [farms](#) across Europe. There are six steps to the programme, chosen according to previous research and stakeholder feedback:

- 1) Map habitats on each farm.

Then use randomly-selected plots from each habitat type on each farm and:

- 2) List plant species and estimate their ground cover of the plot
- 3) Collect and count bees three times
- 4) Collect and count spiders three times
- 5) Collect and count earthworms once.

In the final step:

- 6) Interview farmers about management practices that may affect biodiversity, such as their pesticide usage.

The researchers then assessed costs, including labour costs of time spent at the farm, travel, analysis in the lab and in the office. They also added the cost of equipment and vehicle use.

A 'standard' programme will take at least 14.3 days for a person working alone, the researchers calculate. A standard programme is defined as the monitoring of a 73 hectare farm, with 8 plots for collecting the wildlife species, 15 habitat patches and 1 hour's travelling time involved. However, the methodology presented in the paper allows for the estimation of costs for different farm sizes.

In general, the bee, spider and earthworm indicators were the most time-consuming to monitor. Earthworms need the most time for collection, and spiders need the most time for sorting and analysis in the lab.

Unsurprisingly, labour was the most expensive part of the programmes, and its cost varies widely across Europe: a skilled ecological consultant in Denmark or the UK may charge over €700 per day, for example, whereas in Bulgaria or Romania, the charge is closer to €350 per day. Taking this variation into account, the study estimates that the standard monitoring programme in the EU-27, using professional consultants to carry out all the work, will cost between €4 700-9 100 per farm, depending on the country, with €8 200 the average cost. Over 50% of budget needs to be spent on the fieldwork.

However, the cost could be reduced by up to 46% if farmers themselves did the fieldwork, and by up to 77% if volunteers are recruited, as part of citizen science initiatives, for fieldwork and lab tasks, such as identification of species. Viewed another way, if the total monitoring budget is fixed, 46% more monitoring could be done with farmers involved, and 77% more with citizen scientists.

Working with farmers and volunteers brings different pros and cons, the researchers suggest. For instance, they would need to be trained and supervised – they did not estimate these costs, however. Farmers may not have time to do the fieldwork either. However, environmental engagement and awareness may increase among participants, bringing wider social benefits.



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