

Beetles play an important role in reducing weeds

July 25 2011

Researchers funded by the UK Biotechnology and Biological Sciences Research Council and the French Institut National de la Recherche Agronomique (INRA) have found that ground beetles reduce the amount of weed seeds in the soil. Weeds reduce crop yields and these findings support the need to conserve farmland biodiversity as it plays an important supporting role to herbicides in controlling weeds and improving food security.

This research confirms a long-held belief by scientists that ground beetles play a role in weed control. Dr David Bohan, Rothamsted Research, who led the research, said "seed predation by naturally occurring beetles in farmland does have a beneficial effect, reducing weed numbers in fields and potentially improving [agricultural productivity](#)."

The study, to be published in the August edition of [Journal of Applied Ecology](#), used data from 257 conventionally managed fields throughout the UK to determine the effect that ground beetles have on the number of weed seeds in the soil of [sugar beet](#), maize, and spring and winter oilseed rape fields.

The researchers found that grass [weeds](#) were reduced more than other weeds, which is important because many UK farms have severe grass weed problems. Some of these species are increasingly resistant to herbicides and have a major impact on productivity as they compete with the crop for resources, leading to lower yields. Policy-driven

reduction in herbicide use could lead to higher numbers of weeds in fields, so alternatives to herbicides have the potential for significant impact.

Ground beetles appear to eat a significant proportion of the weed seeds that would otherwise go into the soil. With the right management, ground beetles could be used to replace some herbicide applications and significantly reduce weed populations. 'Beetle banks', which involve leaving an area of a field as a wildlife habitat, are already supported under the Environmental Stewardship schemes available to farmers.

Professor Douglas Kell, Chief Executive, BBSRC said "We have a challenge to feed 9 billion people by 2050 and to do so we must engage in research now that will underpin improvements in yield and sustainability of farming in the future. By studying whole biological systems such as farm ecosystems we can spot the various contributions made by different aspects of a system, including these beetles. This project shows that the balance of farm ecosystems can be vital to ensuring sustainability in farming in the future. It also makes the link between biodiversity and food security very clear."

Provided by Biotechnology and Biological Sciences Research Council

Citation: Beetles play an important role in reducing weeds (2011, July 25) retrieved 2 May 2024 from <https://phys.org/news/2011-07-beetles-important-role-weeds.html>

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