



Conference Abstract

# Toward a better understanding of in-field weed regulation by carabid beetles, and their functional characteristics, in European arable landscapes

Benjamin Carbonne<sup>‡</sup>, David A. Bohan<sup>‡</sup>, Sandrine Petit<sup>‡</sup>

<sup>‡</sup> Agroécologie, AgroSup Dijon, INRA, Université de Bourgogne Franche-Comté, F-21000, Dijon, France

Corresponding author: Benjamin Carbonne ([benjamin.carbonne@inra.fr](mailto:benjamin.carbonne@inra.fr))

Received: 19 Jul 2019 | Published: 22 Jul 2019

Citation: Carbonne B, Bohan DA, Petit S (2019) Toward a better understanding of in-field weed regulation by carabid beetles, and their functional characteristics, in European arable landscapes. ARPHA Conference Abstracts 2: e38379. <https://doi.org/10.3897/aca.2.e38379>

## Abstract

For future arable agriculture, there is a need for more sustainable methods to manage weeds that are less reliant on herbicides and maintain food production. Control of weeds by natural enemies is an agro-ecological alternative to reduce the use of herbicides. While strong evidence points to carabid beetles exerting a regulatory effect on certain weed species, it is difficult to predict whether a particular assemblage of carabid species or functional groups will drive the function of weed seed predation in field conditions. There are also uncertainties about which key local and landscape-scale factors affect the function of weed seed predation, and the functional characteristics of carabid communities. In this presentation, we report on specific research actions being conducted within the wider C-IPM BioAWARE project that focuses on weed regulation by carabid biodiversity. We first briefly present statistical analyses aimed at identifying key assemblages of carabid taxa delivering high weed seed predation of *Viola arvensis* seeds during spring. We then present the principles and the implementation of the BioAWARE large-scale European survey currently in place. We explain how this large-scale design will be used to assess: (i) how landscape characteristics and infield trophic resources determine the functional characteristics and the diversity of carabid communities; and, (ii) key carabid assemblages delivering high seed predation of a large range of weeds through the evolution of the seedbank.

## **Keywords**

carabid beetle, weed seed predation, conservation biological control, biodiversity, C-IPM BioAWARE project

## **Presenting author**

Benjamin Carbonne

## **Presented at**

19thECM oral communication

## **Funding program**

FRB EcoPhyto SEBIOPAG-PHYTO, FACCE C-IPM BioAWARE and INRA MP SMaCH