

Monitoring weed regulation services by carabids

Problem

Weed pressure is one of the most limiting factors in organic arable crops with increasing weed seed bank in cereal crops.

Solution

In addition to mechanical weed control carabids can reduce weed seed bank in arable crops by predation (Westerman et al. 2003). Carabid population is known to be higher in organic fields than in conventionally farmed fields (Diekötter et al., 2010).

Outcome

Monitoring weed seed predation by carabids helps assessing predation potential and provides information for further improvement of their habitats (e.g. field margins).

Practical recommendation

Preparing the seed cards

- Prepare 10 sand paper cards (5 cm x 5 cm) per field and 10 predator exclusion cages with 1 cm squared metal net (Fig. 1) to avoid predation by mammals and birds.
- Glue 10 poppy seeds on each card and place each card within an exclusion cage.

Data collection

- Collect data twice during the crop cycle, preferably in spring for winter cereals (avoiding drought periods).
- Define two transects in the monitored field (Fig. 2). Place 5 seed cards with exclusion cage along each transect and nail them into the floor (day D).
- Remove them after 4 days of exposure to predators (D+4).
- Count the remaining seeds on each card.

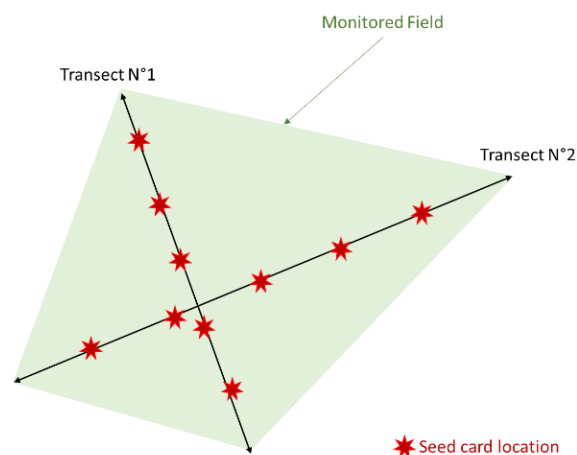


Figure 1: Seed card and exclusion cage in a wheat field (Photo: ITAB). Figure 2: Location of the seed cards along the transects.

Applicability box

Theme

Weed management

Geographical coverage

Global

Application time

Spring

Required time

Preparation of seed cards, two data collections

Period of impact

Actual and succeeding crop

Equipment

Paper cards, predator exclusion cages, glue

Best in

Winter cereals

Data Analysis

- For each date of data collection, note the 10 seed card results as % of predated seeds and compare predation value depending on the location of the cards within the field (e.g. close to field margins).
- For each date of data collection, calculate the mean value of the predation (% of predated seeds) and compare mean value over time (from one date to another).

Improving Carabidae habitats

- Avoid soil disturbance limiting soil tillage (Holland & Reynolds, 2003; Baratt et al., 1994) and covering soil with living or dead mulch.
- Increase environmental heterogeneity (Diekötter et al., 2010).
- Grow grass strips.
- Keep field margins with spontaneous vegetation for overwintering.

Practical testing and sharing of the results

If this method seems to be suitable for your farm, we recommend that you test it under your own farm conditions.

Use the comment section on the [Farmknowledge platform](#) to share your experiences with other farmers, advisors and scientists! If you have any questions concerning the method, please contact the author of the practice abstract by e-mail.



Further information

References

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Weblinks

- Check the [SEBIOPAG project webpage](#) for further information (in French).
- Check the [OK-Net Arable Tool Database](#) for more practical recommendations.

About this practice abstract and OK-Net Arable

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among farmers, farm advisers and scientists with the aim to increase productivity and quality in organic arable cropping all over Europe.

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