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Conference Abstract

Effect of plant protection on assemblages of carabid beetles (Coleoptera, Carabidae) in beetroot crops in four-year rotation

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Abstract

Ground beetles (Col., Carabidae) are common predators in agrocenoses. A number of plant pests occurring on arable fields become their feed. Therefore, they contribute to a natural reduction of the occurrence of pests. In addition, they are well-known bioindicators used, among others to determine the state of the habitats and the impact of human activity on entomofauna. In the fields, the use of chemical plant protection products is a very controversial activity. The aim of the study was to investigate assemblages of ground beetles occupying conventional and organic sugar beetroot crops. Therefore, to determine the impact of the application of pesticides on the assemblages of these useful beetles was made.

The study was conducted at the Agricultural Experimental Station in Winna Góra near Środa Wielkopolska in Poland from May till September of 2004, 2008, 2012 and 2016. The experiment was carried out in the field with organic crop of sugar beet, and in the crop, for which an integrated plant protection programme was planned. The area of each field was 0.5 ha. Modified Barber traps were used to catch insects. On each of the selected fields 10 pitfalls were set up, which were emptied every 14 days.

Within 4 years of the study a total of 11865 specimens belonging to 52 ground beetle species were recorded. 5582 specimens belonging to 50 species and 6283 specimens belonging to 46 species were caught in the fields under chemical protection and organic, respectively. On a multiannual scale, there were no statistically significant differences in the number of individuals and species of Carabidae on conventional and organic fields. Fluctuation in ground beetles abundance and species richness were observed dependent on the year of study but not of the treatment. *Harpalus rufipes* was the most represented species in all fields.

The main conclusion is that using chemical plant protection on a multiannual scale does not adversely affect the number and species richness of ground beetles.

Keywords

ground beetles, sugar beet, pesticide

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