Influence of the Herbicide Tribenuron-Methyl on the Structure of the Hover Fly Community (Diptera: Syrphidae) in a Wheat Ecosystem

Emilia Markova

Sofia University, Faculty of Biology, Department of Ecology and Environmental Protection, 8 Dragan Tsankov Blvd., 1164 Sofia, Bulgaria, e-mail: markovae@abv.bg

Abstract: The influence of the herbicide tribenuron-methyl on the structure of the hover fly community in a wheat ecosystem was investigated through quantification of basic population and community parameters. The species composition, the population density of each species, the total average density, the dominant structure, and the indicators of the species structure of the hover fly community were studied. The used by us indices in the investigation show a deterioration of the ecological situation for the syrphid cenosis in the field immediately after herbicide treatment.

Key words: herbicide, tribenuron-methyl, Granstar, Syrphidae, Diptera

Introduction

A major issue in pest control is the application of highly selective substances, which are tolerant to the useful components of the communities (Burov, Sazonov 1987). The tolerance criterion strongly refers to the most common herbicides in agriculture. Herbicides applied in their standard dosages are known for exhibition and insecticide effect, which differs with the herbicide (Weber 1953, Muller 1971, 1972, Braun 1974, Kowalczyk-Rozek, Slizinski 1977, Edsackers 1978, Sengonka, Kersting 1988). However, studies of the insecticide effect over useful insect taxa like the hover flies were rare (Tanke, Franz 1978, Markova 2003).

There are no references for an influence of tribenuron-methyl on the useful insect fauna in literature. Our research is the first to analyse the effect of that herbicide on basic population and community characteristics of the hover fly communities in natural conditions.

Material and Methods

A field experiment on the influence of tribenuron-methyl on a hover fly community was conducted in a flowering wheat field in the Lozen village, Sofia district. The experiment took place between 10.05 and 25.05.2003. The herbicide, in the form of a Granstar substance, was spread over a 5 ha area in 15 g/ha dosage as a means for weed control. The wheat field was treated with the herbicide by standard on-ground agricultural machinery.

The treatment with the herbicide was executed on 11.05.2003, while the herbicide’s influence was