

## **059 - Einfluss von Blühstreifen in Fahrgassen auf die Insektenpopulation im ökologischen Apfelanbau in Südtirol**

*The influence of interrow flower strips on the insect population in organic apple orchards in South Tyrol*

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Organic apple growers suffer high economic losses due to insect damages. The project EcoOrchard develops low impact and sustainable strategies for ecological pest management to reduce pest losses and promote environmentally friendly products. Perennial, interrow flower strips are a measurement of Functional Agrobiodiversity (FAB) by which the non-crop vegetation is diversified and the faunistic biodiversity is increased. Though the goal-oriented choice of flower and grass species for the EcoOrchard seed mixture flower strips provide food and winter quarters for natural enemies.

As the management of flower strips cause various costs for the producer it is important to evaluate if they are an effective tool to support biological plant protection. The insect within the tree canopy has been evaluated by the EcoOrchard project partners. The insect population within the flower strips might differ from the insect population within the canopy not only because of the distance between tramline and tree.

The aim of this study is to use standardized monitoring methods to determine and evaluate the insect population within perennial, interrow flower strips compared to the regular grass vegetation found in apple orchards. The study deals with the question if the insect population within flower strips contribute to the orchard's resilience and biological plant protection according to FAB.

16 samples were taken from the variants "flower strip" and "control" by use of the battery-operated field aspirator InsectaZooka at the research center Laimburg in South Tyrol. The two organically managed orchards were not sprayed with insecticides. The flower strips were sown at of width of 28 x 0,5 m. The suction time was limited to one minute and a wooden frame (1,2 m<sup>2</sup>) was used to limit the suction space. The collected samples were frozen and visually determined by entomological identification keys. For evaluation, insects were divided into four groups: natural enemies, generally beneficials, pest species and indifferent species.

A general linear model was used to determine significant differences between flower strips and control for the five insect groups ( $\alpha = 5\%$ ). A linear discriminant analysis was applied to identify a smaller amount of not correlating variables in order to make interpretation easier.

The number of natural enemies was significantly increased in flower strips while the number of pest species was significantly decreased. Moreover, there a trend towards a higher population of generally beneficial insects and indifferent species was observed. In line with this, an almost complete spatial separation of the variants is possible through linear discriminant analysis. The first two main components explain 79% of the variation.

The present trial shows that perennial inter-row flower strips are a reasonable measure towards the use of functional agrobiodiversity in apple orchards. Due to the enhanced ability for self-regulation perennial, interrow flower strips can be used as supplemental biological plant protection measures in organic apple orchards.

### Literatur

PIFFNER, L., L. JAMAR, F. CAHENZLI, M. KORSGAARD, W. SWIERGIEL, L. SIGSGAARD, 2018: Perennial flower strips – a tool for improving pest control in fruit orchards. Hg.v. Forschungsinstitut für biologischen Landbau, Julius-Kühn-Institut, Versuchszentrum Laimburg.

UNIVERSITY OF COPENHAGEN, DEPARTMENT OF PLANT AND ENVIRONMENTAL SCIENCES, 2018: Final report for the CORE Organic Plus funded project "Innovative design and management to boost functional biodiversity of organic orchards EcoOrchard".