



QUANTITATIVE EVALUATION OF THE PEST HALYOMORPHA HALYS IN THE ADULT STAGE IN THE WINTERING PLACES NEAR THE FORESTS

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Abstract: One of the most present pests in the last 5-6 years in various sectors (agricultural, horticultural, forestry) is definitely the *Halyomorpha halys* insect from the Pentatomidae family. The insect is somewhat established in Romania, 8 years have passed since its first reporting. Mainly, it is considered a species that lives near houses and the active life of people and feeds on leaves, inflorescences and fruits from urban spaces, that's why we thought of analyzing the wintering places with more interest.

Introduction

Going through the winter of *Halyomorpha* adults is conditioned by the existence of sheltered places, such as people's houses, sheds, forests. As such, through the present study we set out to see if the Green Forest constitutes a suitable habitat for the hibernation and overwintering of *Halyomorpha halys* adults. All of these being imported mainly due to the fact that there are numerous species of host plants from the agro-horticultural category nearby.

Material and method

To assess the hibernating population, we surveyed 5 spaces (marginal strips) along Green Forest, both in early winter (November) and late winter (March), then in April to see if they were still present. The analysed substrate consisted of fallen leaves on the ground and grass, mixed on a surface of 1m² with deciduous leaves and leafy shrubs. The thickness of the fallen foliage layer was taken into account, from 3 cm to 9 cm. The quantification of the number of adults was carried out between November 2023 and April 2024.



Fig. 1 Adults of *Halyomorpha halys* collected in various marginal places in the Green Forests: 1- in November 2023; 2,3- in March and April 2024

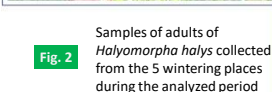


Fig. 2 Samples of adults of *Halyomorpha halys* collected from the 5 wintering places during the analyzed period



Fig. 3 A gender analysis of the hibernating individuals is shown in Figure 3 and shows that males predominated in both autumn and spring samples, i.e. 25 and 11 male individuals and 20 and 7 female individuals, respectively.

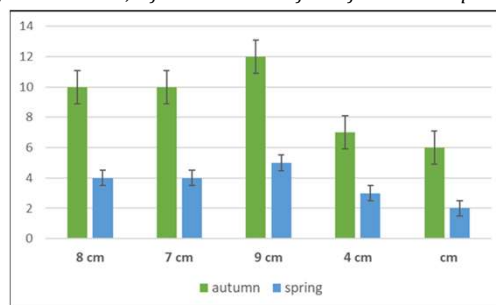


Fig. 4

Comparing the wintering layers with fallen foliage on the ground, it was observed that the thicker the substrate, the higher the number of adult individuals. At a thickness of 9 cm (the thickest layer in fact), the most hibernating specimens were recorded both at the beginning of winter and at the end of winter, i.e. 12 and 5 respectively. The fewest specimens were found in the thinnest substrate, of 3 cm, with limits of 6 individuals found in autumn and 2 in spring (fig. 4).

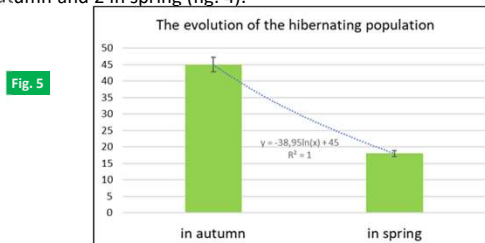


Fig. 5

The evolution of hibernating individuals was clearly decreasing during the period November 2023-April 2024. In autumn, 45 *Halyomorpha* adults without gender distinction were quantified from the 5 samples taken from the wintering sites, while in spring only 18 individuals remained

Conclusions

In the light of what was observed, we can conclude that *Halyomorpha* is an extremely dangerous phytophagous insect for inhabited areas with mixed gardens, spaces and urban parks, but also for agricultural crops such as corn due to its high capacity for migration, adaptation and feeding. The existence of suitable wintering places such as deciduous forests influences these capacities and especially hibernation so that a thick substrate of fallen leaves on the ground can attract many individuals but can ensure their passage through the winter and re-infestation of the surrounding plants and crops. As such, special attention must be paid especially to the host plants around the Green Forest, which will be continuously infested and re-infested even if control measures are taken.

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Acknowledgement

We thank the Timis Forest Management for making available the organization of the sectors and the plant composition of the Green Forest.

