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THE IMPACT OF THE SPECIES *ZEUZERA PYRINA* L. ON THE BIODIVERSITY AND STABILITY OF WALNUT ECOSYSTEMS IN THE REPUBLIC OF MOLDOVA

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PURPOSE

Walnut ecosystems (*Juglans regia* L.) represent an important component of agroecosystems in the Republic of Moldova, having both economic and ecological value through their contribution to maintaining biodiversity and environmental stability. In recent years, the expansion of walnut plantations has been accompanied by increased pressure from various pests, among which *Zeuzera pyrina* L. (Lepidoptera: Cossidae) is considered one of the most dangerous xylophagous species (Fig. 1).

Fig. 1. A. adultul de *Zeuzera pyrina* L. (Lepidoptera: Cossidae)
B. larva de *Z. pyrina* identificată în procesul de distrugerea a integrității pomului

This species is recognized as a major pest of trees, with larvae developing inside woody tissues, where they create extensive galleries and compromise the structural integrity of plants (Karimzadeh et al., 2023). In the Republic of Moldova, recent studies highlight the emerging nature of this pest and its significant impact on walnut orchards (Fron, 2024).

The aim of the research is to evaluate the impact of *Zeuzera pyrina* on the biodiversity and stability of walnut ecosystems in the Republic of Moldova.

MATERIALS AND METHODS

Monitoring was carried out in two plantations (Fernor variety) of 1 ha: station I - Bubuieci village, Chișinău municipality, aged 17 years, and station II - Sadova village, Călărași district, aged 10 years. Delta pheromonal traps were used to monitor adult activity, placed in the tree canopy at a height of 1.5-2.0 meters above ground level. Traps were checked weekly, and the number of captured males was recorded. In parallel, a systematic visual inspection was carried out to identify symptoms of infestation (presence of holes, galleries, branch and trunk breaks).

RESULTS

The results revealed that *Zeuzera pyrina* has a significant impact on walnut trees through the development of larval galleries within the wood, which can reach lengths of up to 50 cm, (Fron & Batco, 2025). Severely affecting the structural integrity of the trees (Fig. 2).

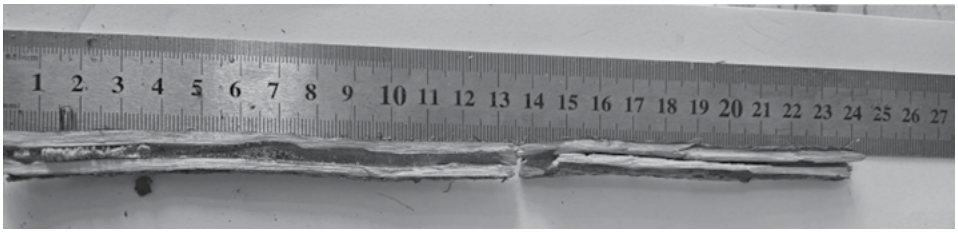

Fig.2. Dezvoltarea galeriilor în ramurile *Junglas regia*

Following infestation:

- approximately 24.4% of the analyzed trees were infested;
- over 58% of the branches showed signs of degradation (Fig. 3);
- progressive branch dieback and a decline in tree vitality were observed.

Additionally, it was found that:

- affected trees become more vulnerable to other biotic factors;
- degraded wood facilitates the establishment of fungi and saproxylic insects;
- new microhabitats are created, altering the structure of biological communities.

Fig.3. Gradul de infestare produs de către *Z. pyrina*

CONCLUSIONS

The continued expansion of the species requires the urgent application of integrated pest control methods. Pheromone traps are an essential tool for the early detection and assessment of the distribution of this dangerous pest, but their use is not sufficient in the absence of other complementary measures.

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