

Seasonal Visualization of Insect Distribution in Grain Warehouses - Abstract

Paraskevi Agrafioti^{1,2}, Evagelia Lampiri², Efstathios Kaloudis³, Christos G. Athanassiou^{1,2} and Dimitrios Kateris¹

¹ Institute for Bio-Economy and Agri-Technology (iBO), Centre for Research and Technology-Hellas (CERTH), 6th km Charilaou-Thermi Rd, 57001, Thessaloniki, Greece

² Laboratory of Entomology and Agricultural Zoology, Department of Agriculture, Crop Production and Rural environment, University of Thessaly, 38446 Volos, Greece

³ Department of Food Science and Nutrition, School of the Environment, University of the Aegean, Ierou Lochou 10 & Makrygianni, 81400, Lemnos, Greece

Summary

In the present study, the seasonal distribution of stored product insects was recorded, spatially visualized, and evaluated in a feed production industry in Northern Greece. The installation of the trapping network was established in July 2021 and the monitoring lasted from August 2021 until April 2022. A total of 30 Dome traps (Trece Inc.) were installed for crawling insects and 8 hanging Delta traps (Trece Inc.) for Lepidoptera. Oil (Storgard Oil, Trece Inc.) was used as an attractive agent at Dome traps, while for the Delta traps pheromone was used for *Plodia interpunctella* (Lepidoptera: Pyralidae) and *Ephestia* spp. (Lepidoptera: Pyralidae). All insect samples taken were transferred to the Laboratory of Entomology and Agricultural Zoology for counting and identification. Furthermore, using relevant Python libraries, the data were spatially visualized based on the building floor plan. This process enabled the identification of zones/areas in the building with the higher insect activity. The results showed that in the summer months the captures were significantly higher than in the winter months, with the highest number of insects being recorded on 02/09/21 (999 individuals). The dominant stored product species for the summer period were certain stored product moths, including *P. interpunctella* and the genus *Ephestia* spp., as well as the tobacco beetle, *Lasioderma serricornis* (F.) (Coleoptera: Anobiidae). In contrast, during the winter months the populations of the aforementioned species were decreased significantly and increased the species *Sitophilus granarius* (L.) (Coleoptera: Curculionidae), *Tribolium confusum* Jacquelin du Val (Coleoptera: Tenebrionidae) and *Oryzaephilus surinamensis* (L.) (Coleoptera: Silvanidae). The insect monitoring and the spatial visualization will continue for another year in order to assess the levels of insect populations and therefore to apply focused solutions depending on the insect species and the area of infestation.

Keywords

stored product insects, feed, traps, seasonal distribution, visualization

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EMAIL: p.agrafioti@certh.gr (A. 1); elampiri@agr.uth.gr (A. 2); stathiskaloudis@aegean.gr (A. 3); athanassiou@uth.gr (A. 4); d.kateris@certh.gr (A. 5)

ORCID: 0000-0002-5731-9472 (A. 5)



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