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SEASONAL DYNAMICS OF MAIZE PESTS IN TWO PIONEER HYBRIDS BEFORE AND AFTER BUSTER BIOINSECTICIDE APPLICATION IN UZDIN, SERBIA

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Abstract: *The management of insect pests in maize increasingly requires approaches that combine crop monitoring with environmentally oriented protection strategies. This study investigated the seasonal dynamics of five maize-associated insect pests and the changes in their abundance before and after bio-insecticide (Bio Baster) application in two Pioneer maize hybrids cultivated in Uzdin, Serbia, during 2026. Monitoring was conducted from 19 May to 14 September using yellow sticky panel traps without pheromones for Rhopalosiphum maidis and Oulema melanopa, pheromone-baited panel traps for Diabrotica virgifera virgifera, a Delta trap for Ostrinia nubilalis, and direct adult counts for Pentodon idiota. The study provides a field-based comparison of pest population dynamics in two maize hybrids and provide preliminary information for future controlled evaluations.*

Introduction

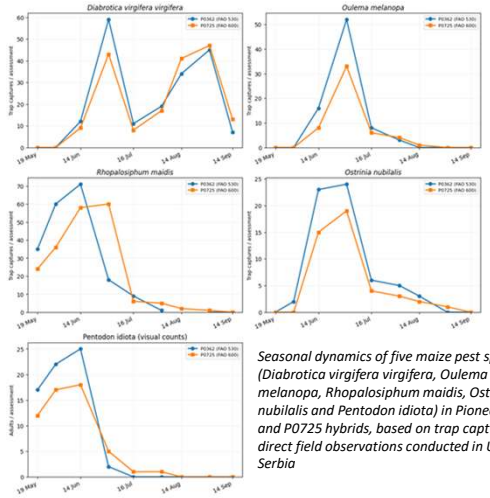
In European maize-growing regions, pest management remains an important component of crop protection, particularly under conditions favoring the development and spread of economically important insect species (MEISSLE ET AL., 2011; BAŽOK ET AL., 2021). Biological alternatives have been investigated for the management of maize pests, particularly through microbial insecticides and complementary integrated pest management practices.

Relative monthly species composition

Material and method

Monitoring was performed on nine dates between 19 May and 14 September 2026. Five yellow sticky panel traps without pheromones were used for Rhopalosiphum maidis and Oulema melanopa, while five pheromone-baited sticky panel traps were used for Diabrotica virgifera virgifera. One Delta-type trap was installed for Ostrinia nubilalis. All traps were uniformly distributed within the experimental area of each hybrid. Adults of Pentodon idiota were assessed separately through direct counts on the soil surface around maize plants.

Bio Buster was applied on 2 July 2026 at a dose of 1 L ha^{-1}, using 300 L ha^{-1} of spray solution. Changes in insect abundance were assessed by comparing the observations recorded immediately before treatment (1 July) and 14 days after treatment (16 July). Seasonal population dynamics were evaluated using the complete series of nine observations.



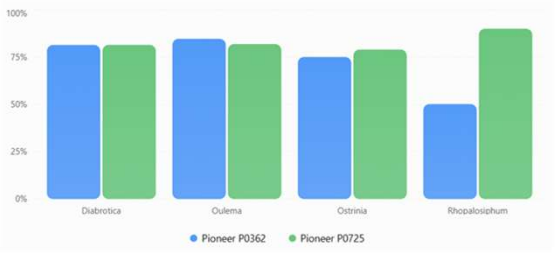
Seasonal dynamics of five maize pest species (Diabrotica virgifera virgifera, Oulema melanopa, Rhopalosiphum maidis, Ostrinia nubilalis and Pentodon idiota) in Pioneer P0362 and P0725 hybrids, based on trap captures and direct field observations conducted in Uzdin, Serbia

Results and discussions

The monitoring carried out between 19 May and 14 September 2026 revealed distinct seasonal patterns among the five insect species recorded in the two maize hybrids. Although all species were identified in both experimental plots, differences were observed in their periods of maximum abundance, capture intensity and duration of seasonal activity.

Following Bio Buster application on 2 July 2026, a marked reduction in insect captures was recorded in both Pioneer maize hybrids. The comparison between the assessments performed on 1 July, immediately before treatment, and 16 July, 14 days after application, revealed different levels of population reduction among the four species monitored using insect traps

Overall, the reductions observed during the first 14 days following Bio Buster application indicate substantial short-term changes in insect capture activity.



The similar patterns recorded for several pest species in the two maize hybrids provide useful information for assessing post-treatment population dynamics and for developing future monitoring-based biological protection strategies.

Conclusions

Following Bio Buster application, substantial reductions in insect captures were recorded in both hybrids. The most consistent response was observed for D. v. virgifera, with relative reductions of approximately 81.4% in both plots. Oulema melanopa and Ostrinia nubilalis also showed pronounced decreases, whereas R. maidis exhibited greater differences between hybrids. The subsequent increase in D. v. virgifera captures during August highlighted the importance of continued monitoring throughout the growing season. Differences in pest abundance between the two hybrids further indicated the relevance of crop development and seasonal insect activity when evaluating protection strategies.

Overall, the results provide useful preliminary field information on pest population changes following Bio Buster application and support the integration of biological products with species-specific monitoring. Future research should focus on optimizing application timing and evaluating biological protection strategies under different maize-growing conditions.

References (selective)

BAŽOK, R., LEMIĆ, D., CHIARINI, F., FURLAN, L., 2021 – Western corn rootworm (Diabrotica virgifera virgifera LeConte) in Europe: Current status and sustainable pest management. Insects, 12(3): 195.

COSTEA, M.A., GROZEA, I., 2022 – Analysis of the range of pests and their effect on maize plants growing in the organic system. Scientific Papers. Series A. Agronomy, 65(1): 258–265.

FURLAN, L., KREUTZWEISER, D., 2015 – Alternatives to neonicotinoid insecticides for pest control: case studies in agriculture and forestry. Environmental Science and Pollution Research, 22: 135–147.

KUMAR, P., KAMLE, M., BORAH, R., MAHATO, D.K., SHARMA, B., 2021 – Bacillus thuringiensis as microbial biopesticide: uses and application for sustainable agriculture. Egyptian Journal of Biological Pest Control, 31: 95.

MEISSLE, M., MOURON, P., MUSA, T., BIGLER, F., PONS, X., VASILEIADIS, V.P., ET AL., 2010 – Pests, pesticide use and alternative options in European maize production: Current status and future prospects. Journal of Applied Entomology, 134: 357–375.