



## THE EFFECT OF ALFALFA (MEDICAGO SATIVA L.) VARIETIES ON ENTOMOFAUNA

Kholiskhon Maksudovna Rakimova

Associate Professor, Department of Biology, Urgench State University named after Abu Rayhon Beruni, PhD in Biological Sciences E-mail: rxolisxon@inbox.ru

Maqsuda Bakhodirovna Karimova

Biology Lecturer

**Abstract:** This study investigated the impact of alfalfa (*Medicago sativa L.*) varieties on the diversity and abundance of entomofauna within agroecosystems. The influence of different varieties on insect populations was evaluated depending on their morphological and phenological characteristics. The results indicate that the choice of alfalfa variety is important not only for productivity but also for maintaining ecological stability in agroecosystems.

**Keywords:** *Medicago sativa L.*, entomofauna, agrobiocenosis, beneficial insects, biodiversity, ecological stability.

### INTRODUCTION

Alfalfa (*Medicago sativa L.*) is a highly nutritious forage crop that plays a significant role in agroecosystems. The entomofauna inhabiting alfalfa fields contributes to pollination, biological control of pest species, and the maintenance of ecological balance. Therefore, understanding the effects of different alfalfa varieties on entomofauna is essential for effective agrobiocenosis management and sustainable agriculture.

**Materials and methods.** The research was conducted during the 2024–2025 growing seasons under the agro-climatic conditions of the Khorezm region, Uzbekistan. Field experiments were carried out using four officially registered alfalfa varieties: “Saidov-1”, “Uzbekistan-18”, “Medicago-305”, and “Kibray”. The diversity, abundance, and ecological roles (beneficial, harmful, or neutral) of insect species were recorded every 10 days using a standard entomological sweep net. Insects were identified based on taxonomic keys and entomological manuals.

**Results and discussion.** Significant differences were observed in the diversity and population density of entomofauna among the studied varieties. The variety “Saidov-1” supported 25–30% more beneficial insects (bees, parasitic flies, predatory beetles) compared to the other varieties, likely due to its extended flowering period and higher nectar production.



In contrast, harmful species such as *Aphis medicaginis* and *Sitona* spp. were more abundant in the “Medicago-305” variety, which may be associated with its leaf morphology and chemical composition.

Overall species richness and ecological diversity (Shannon index) were highest in “Saidov-1” and “Uzbekistan-18”, demonstrating their importance in enhancing the ecological stability of agrobiocenoses.

Conclusion. The influence of alfalfa varieties on entomofauna depends on their morphological and phenological traits, which play a crucial role in providing habitats and food sources for beneficial insects.

Selecting varieties that attract a higher number of beneficial species can be an effective strategy to improve ecological stability and strengthen biological control within agroecosystems.

#### REFERENCES:

1. Arab, S. A., & El Shal, T. (2013). Evaluation of some alfalfa (*Medicago sativa* L.) genotypes collected from different regions of the Western Desert in comparison with varieties. *Journal of Agricultural and Environmental Sciences*, 2(4), 101–110. Retrieved from <https://agro.journals.ekb.eg>
2. del Portillo, D. G., Rusch, A., & Baudry, J. (2022). The adequacy of alfalfa crops as an agri-environmental tool: Stable arthropod communities that benefit surrounding crops. *Basic and Applied Ecology*, 62, 12–21. <https://doi.org/10.1016/j.baae.2022.04.005>
3. Mirfakhraie, S., Khanjani, M., & Ashouri, A. (2017). Aphids and ladybird beetles' abundance and diversity in alfalfa fields. *Journal of Entomological and Agricultural Research*, 3(2), 55–64. Retrieved from <https://www.pagepressjournals.org>
4. Nikolova, I. (2019). Entomofauna of Coleoptera in alfalfa agroecosystems. *Agricultural Science and Technology*, 11(3), 256–262. <https://doi.org/10.15547/ast.2019.03.013>
5. Nikolova, I. (2021). Regularities in the formation of entomofauna in alfalfa agroecosystems. *Bulgarian Journal of Agricultural Science*, 27(4), 689–696. Retrieved from <https://www.researchgate.net>
6. Razzaq, S. A., & Al-Saffar, H. H. (2016). Survey of Coleopteran insects on alfalfa plant (*Medicago sativa* L.). *International Journal of Current Microbiology and Applied Sciences*, 5(3), 548–554. Retrieved from <https://www.ijcmas.com>
7. Rixsikhodjaevna, A. D., Yusupovich, R. A., & Bobakulovna, H. P. (2021). Formation of the alfalfa entomofauna. *Ukrainian Journal of Ecology*, 11(2), 235–240. Retrieved from <https://www.ujecology.com>





8. Zhang, Y., Wang, L., Li, Q., & Zhao, H. (2025). Advances in basic biology of alfalfa (*Medicago sativa* L.): A comprehensive overview. *Horticulture Research*, 12(3), 150–168. <https://doi.org/10.1093/hr/uhab236>

