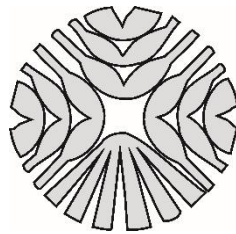


*Agricultural University*  
*Plovdiv*

# AGRICULTURAL SCIENCES



**Volume 16 Issue 41**  
**Plovdiv 2024**

**Academic Publishing House of the Agricultural University**

*Agricultural Sciences* is a journal of the Agricultural University – Plovdiv.  
Original research papers and reviews in all areas of Crop Science, Plant Protection, Ecology,  
Animal Breeding and Husbandry, Economy and Tourism are published in the journal  
in English.

**Editor-in-Chief** – Prof. Andon Vassilev, PhD  
**Deputy-Editor-in-Chief** – Assoc. Prof. Valeria Ivanova, PhD

*Editorial board*

Prof. Vladislav Popov, PhD  
Prof. Vili Harizanova, PhD  
Prof. Ivan Manolov, PhD  
Prof. Ivan Penov, PhD  
Prof. Vasil Nikolov, PhD  
Prof. Valentin Lichev, PhD  
Prof. Nikolay Panayotov, PhD  
Associate Prof. Stoyan Ishpekov, PhD  
Petya Georgieva, PhD

*Associate Editors*

Prof. Jaco Vangronsveld, PhD  
Prof. Manuel Peixoto Teixeira Leitão, PhD  
Prof. Dorota Jadczyk, DSc  
Prof. Agnieszka Wrzochalska, DSc  
Prof. Nurlan Serekpaev, DSc  
Prof. Nikolay Vasilev, PhD

**Indexing:**

EBSCO Academic Search Ultimate  
CAB International - CAB Abstracts  
Web of Science - CABI  
Google Scholar  
AGRIS

Editorial Secretary- Assist. Prof. Katya Dimitrova, PhD  
Executive Editor – Assist. Prof. Nikola Tsaikin, PhD  
Language Editor – Assist. Prof. Zlatina Bogdanova, PhD

Format – 16/60x84    Quires – 9,25  
Academic Publishing House of the Agricultural University

© *Agricultural Sciences*, 2024

ISSN 2603-4638 (print)

ISSN 3033-0149 (online)

Agricultural University – Plovdiv, 12, Mendeleev Blvd.

[www.au-plovdiv.bg](http://www.au-plovdiv.bg)

E-mail: [agriculturalsciences@au-plovdiv.bg](mailto:agriculturalsciences@au-plovdiv.bg)