



Research in Agricultural Sciences

Formerly: Atatürk University Journal of Agricultural Faculty

Official journal of Atatürk University Agricultural Faculty

Volume 54 • Issue I • January 2023



Research in Agricultural Sciences

Editor

Göksel TOZLU D

Department of Plant Protection, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Associate Editors

Bülent ÇETİN 💿

Department of Food Engineering, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Erdoğan ÖZTÜRK 🕒

Department of Field Crops, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Selda ORS CIRIK 🗓

Department of Agricultural Structures and Irrigations, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Nuray DEMİR 10

Department of Agricultural Economics, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Serdar BİLEN 🗓

Department of Soil Science and Plant Nutrition, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Saliha ÇORUH 🕒

Department of Plant Protection, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Cihat YILDIZ

Department of Agriculture, Machinery, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Melek EKİNCİ D

Department of Horticulture, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Murat AYDIN (1)

Department of Biotechnology, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Sinan KOPUZLU D

Department of Zootechnics, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Markéta MIHÁLIKOVÁ

Department of Water Resources, Czech University of Life Sciences, Faculty of Agrobiology, Food and Natural Resources, Prague, The Czech Republic

Advisory Board

Taskın ÖZTAS 🕞

Department of Soil Science and Plant Nutrition, Atatürk University, Faculty of Agriculture, Erzurum, Turkey

Fikrettin ŞAHİN 📵

Department of Genetics and Bioengineering, Yeditepe University, Faculty of Engineering, İstanbul, Turkey

Marcin KADEJ

Department of Invertebrate Biology, University of Wroclaw, Faculty of Biology, Evolution and Conservation, Evolution and Ecology, Wrocław, Poland

Giuseppe Fabrizio TURRISI 📵

Ministry of Education, University and Research, Catania, Italy

Celeste WELTY

Professor Emerita, Ohio State University, Columbus, Ohio, USA

Atilla DURSUN 📵

Turkish Manas University, Kyrgyz-Turkish Manas University

Geza BUJDOSO D

Hungarian University of Agriculture and Life Sciences, Research Centre for Fruit Growing, Budapest, Hungary

Shakeel AHMAD (1)

Department of Agronomy, Bahauddin Zakariya University, Multan, Pakistan

Li YANG

College of Mechanical and Electrical Engineering, Shihezi University, Shihezi, China

MAVES

ibrahim Kara

General Manager

Ali Şahin

Publishing Directors

İrem Soysal Gökhan Çimen

Editor

Bahar Albayrak

Publications Coordinators

Arzu Arı Deniz Kaya Irmak Berberoğlu Alara Ergin Hira Gizem Fidan Vuslat Taş İrem Özmen

Web Coordinators

Sinem Fehime Koz Doğan Oruç

Finance Coordinator

Elif Yıldız Çelik

Contact

Publisher: Atatürk University Address: Atatürk University, Yakutiye, Erzurum, Turkey

Publishing Service: AVES
Address: Büyükdere Cad., 105/9 34394
Şişli, İstanbul, Turkey
Phone: +90 212 217 17 00
E-mail: info@avesyayincilik.com
Webpage: www.avesyayincilik.com

Research in Agricultural Sciences

AIMS AND SCOPE

Research in Agricultural Sciences is a scientific, open access, online-only periodical published in accordance with independent, unbiased, and double-blinded peer-review principles. The journal is official publication of the Atatürk University Faculty of Agriculture and published tri-annually on January, May and September. The publication languages of the journal are Turkish and English.

Research in Agricultural Sciences aims to contribute to the science by publishing high quality publications in all fields of agricultural sciences. The journal publishes original articles, compilations, technical notes and letters to the editor.

The scope of the journal includes but not limited to horticultural crops, plant protection, biosystems engineering, food engineering, forestry engineering, landscape architecture, aquaculture, agricultural economics, agricultural mechanization, agricultural structures and irrigation, field crops, soil, plant physiology, breeding and genetics, cultivation technique and horticultural crops.

The editorial and publication processes of the journal are shaped in accordance with the guidelines of the International Committee of Medical Journal Editors (ICMJE), World Association of Medical Editors (WAME), Council of Science Editors (CSE), Committee on Publication Ethics (COPE), European Association of Science Editors (EASE), and National Information Standards Organization (NISO). The journal is in conformity with the Principles of Transparency and Best Practice in Scholarly Publishing (doaj.org/bestpractice).

Research in Agricultural Sciences is currently indexed in Web of Science-Zoological Record, CABI, EBSCO, ProQuest, MIAR, DRJI, Index Copernicus, CNKI, and TÜBİTAK ULAKBİM TR Dizin.

All expenses of the journal are covered by the Atatürk University. Processing and publication are free of charge with the journal. No fees are requested from the authors at any point throughout the evaluation and publication process. All manuscripts must be submitted via the online submission system, which is available at www.agriculture-ataunipress.org. The journal guidelines, technical information, and the required forms are available on the journal's web page.

Statements or opinions expressed in the manuscripts published in the journal reflect the views of the author(s) and not the opinions of the Atatürk University Faculty of Agriculture, editors, editorial board, and/or publisher; the editors, editorial board, and publisher disclaim any responsibility or liability for such materials.

Open Access Statement

Research in Agricultural Sciences is an open access publication, and the journal's publication model is based on Budapest Access Initiative (BOAI) declaration. All published content is available online, free of charge at www.agriculture-ataunipress.org. The journal's content is licensed under a Creative Commons Attribution-NonCommercial (CC BY-NC) 4.0 International License which permits third parties to share and adapt the content for non-commercial purposes by giving the appropriate credit to the original work.

You can find the current version of the Instructions to Authors at https://agriculture-ataunipress.org/

Editor in Chief: Göksel Tozlu

Address: Atatürk University Faculty of Agriculture, Erzurum, Turkey

E-mail: auzfdeditor@atauni.edu.tr

Publisher: Atatürk University

Address: Atatürk University, Yakutiye, Erzurum, Turkey

Publishing Service: AVES

Address: Büyükdere Cad., 105/9 34394 Şişli, İstanbul, Turkey

Phone: +90 212 217 17 00 E-mail: info@avesyayincilik.com Webpage: www.avesyayincilik.com

Research in Agricultural Sciences

CONTENTS

Reviewers I i	

Acknowledgement of Reviewers	1
Research Article	
Influence of Intercropping on the Growth and Yield Performance of Upland Rice (Oryza sativa L. var. zambales) and Peanut (Arachis hypogaea L.) Jerome AMARADO, Ulysses CAGASAN	2
Total Costs, Labor Requirements, and Work Efficiencies in Rice Production Mechanization in Turkey: A Case Study From Samsun Province Hasret TÜRER, Taner YILDIZ	9
Determination of the Effect of Irrigation Water and Nitrogen Applications on Potato Beetle (<i>Leptinotarsa decemlineata</i> Say) and Natural Enemy Populations Erdal DAŞCI, İrfan ASLAN	15
Effects of Some Temperature and Dormancy-Breaking Applications on Germination Rates of Camelthorn (<i>Alhagi pseudalhagi</i> (Bieb.) Desv.) Seeds Bilal KESKİN, Süleyman TEMEL, Gülüm GÜREL, Eren ÖZDEN	22
Evaluation of Solid and Liquid Fertilizers in Increasing of Yield, Phosphorus Agronomic and Reuptake Efficiency of Sugar Beet Duygu Akçay KULLUK, Fatma Gökmen YILMAZ, Mustafa HARMANKAYA, Sait GEZGIN	31
Review	
Use of Steel Slags for Agricultural Purposes Gülşen TOZSİN, Taşkın ÖZTAŞ	36
Ice Nucleation Active Bacteria in Vineyards and Orchards and Low Temperature Damage Muhammed KÜPE	42