

VOLUME | ISSUE | YEAR  
46 | 4 | 2022  
ISSN 1300-008X • E-ISSN 1303-6106

TURKISH JOURNAL OF  
**BOTANY**

<http://journals.tubitak.gov.tr/botany/>



Published by the Scientific and  
Technological Research Council of Turkey

**TÜBİTAK**

# TURKISH JOURNAL OF BOTANY

**Editor-in-Chief**

Asim KADIOĞLU, Karadeniz Technical University, Turkey

**Assistant Editor-in-Chief**

Ferhat CELEP, Kırıkkale University, Turkey

Jeff OLLERTON, University of Northampton, UK

**VOLUME 46 • ISSUE 4 • 2022**

ISSN 1300-0985 • E-ISSN 1303-619X

## SCOPE OF JOURNAL

The Turkish Journal of Botany is published electronically 6 times a year by the Scientific and Technological Research Council of Turkey (TÜBİTAK) and accepts manuscripts (in English) covering all areas of plant biology (including genetics, evolution, systematics, structure, function, development, diversity, conservation biology, biogeography, paleobotany, ontogeny, functional morphology, ecology, reproductive biology, and pollination biology), all levels of organisation (molecular to ecosystem), and all plant groups and allied organisms (algae, fungi, and lichens). Authors are required to frame their research questions and discuss their results in terms of major questions in plant biology. In general, papers that are too narrowly focused, purely descriptive, or broad surveys, or that contain only preliminary data or natural history, will not be considered.

## EDITORIAL BOARD

- Abdullah KAYA, Gazi University, Turkey
- Abuzer ÇELEKLİ, Gaziantep University, Turkey
- Adem BIÇAKÇI, Uludağ University, Turkey
- Ahmet AKSOY, Akdeniz University, Turkey
- Ahmet ASAN, Trakya University, Turkey
- Aleel K. GRENAN, University of Illinois, U.S.A.
- Ali Aslan DÖNMEZ, Hacettepe University, Turkey
- André Rodrigo RECH, Universidade Federal dos Vales do Jequitinhonha e Mucuri, Brazil
- Aykut GÜVENSEN, Ege University, Turkey
- Ayla KAYA, Anadolu University, Turkey
- Ayşegül KÖROĞLU, Ankara University, Turkey
- Barış ÖZÜDOĞRU, Hacettepe University, Turkey
- Barış UZİLDAY, Ege University, Turkey
- Birol MUTLU, İnönü University, Turkey
- Bo Li, Jiangxi Agricultural University, China
- Bryan T. DREW, University of Nebraska, U.S.A.
- Burcu ALPTEKİN, University of Wisconsin, U.S.A.
- Carmen Galan SOLDEVILLA, University of Córdoba, Spain
- Cengiz KAYA, Harran University, Turkey
- Ceyda ÖZFİDAN KONAÇI, Necmettin Erbakan University, Turkey
- Chunlei XIANG, Chinese Academy of Sciences, China
- Dietmar QUANDT, University of Bonn, Germany
- Dirk Carl ALBACH, University Oldenburg, Germany
- Emin UĞURLU, Bursa Technical University, Turkey
- Ergin HAMZAOĞLU, Gazi University, Turkey
- Ertuğrul SESLİ, Trabzon University, Turkey
- Esra MARTIN, Necmettin Erbakan University, Turkey
- Evren YILDIZTUGAY, Selçuk University, Turkey
- Fatma ÜNAL, Gazi University, Turkey
- Gökhan ABAY, Recep Tayyip Erdoğan University, Turkey
- Gökhan ZENGİN, Selçuk University, Turkey
- Graziela CURY, Universidade de São Paulo, Brazil
- Güray UYAR, Ankara Hacı Bayram Veli University, Turkey
- Gürkan SEMİZ, Pamukkale University, Turkey
- Hamdi Güray KUTBAY, Ondokuz Mayıs University, Turkey
- Hasan Hüseyin DOĞAN, Selçuk University, Turkey
- Hayri DUMAN, Gazi University, Turkey
- Hye-Kyoung MOON, Kyung Hee University, South Korea
- İlkay ERDOĞAN ORHAN, Gazi University, Turkey
- İsmail TÜRKAN, Ege University, Turkey
- Jeff ROSE, University of Wisconsin, U.S.A.
- John MCNEIL, Monash University, Australia
- Kamil COŞKUNÇELEBİ, Karadeniz Technical University, Turkey
- Krzysztof SPALIK, University of Warsaw, Poland
- Kuddisi ERTUĞRUL, Selçuk University, Turkey
- Luigi NASELLI-FLORES, University of Palermo, Italy
- Lütfi BEHÇET, Bingöl University, Turkey
- Mark CHASE, Royal Botanic Gardens, KEW, United Kingdom
- Martin A. LYSAK, Masaryk University, Czech Republic
- Maximilian WEIGEND, Nees-Institut für Biodiversität der Pflanzen, Germany
- Mehmet Cengiz BALOĞLU, Kastamonu University, Turkey
- Mehmet Gökhan HALICI, Erciyes University, Turkey
- Melis AKMAN, University of California, Berkeley, U.S.A.
- Mengxiang SUN, Wuhan University, China
- Muhammad ZAFAR, Quaid-i Azam University, Pakistan
- Neslihan SARUHAN GÜLER, Karadeniz Technical University, Turkey
- Nur Münevver PINAR, Ankara University, Turkey
- Nuray KAYA, Akdeniz University, Turkey
- Osman TUGAY, Selçuk University, Turkey
- Pilar CATALAN, University of Zaragoza, Spain
- Rıza BİNZET, Mersin University, Turkey
- Sara MANAFZADEH, ETH Zurich, Switzerland
- Selami SELVİ, Balıkesir University, Turkey
- Serdar MAKBUL, Recep Tayyip Erdoğan University, Turkey
- Sevcin ÇELENK, Uludağ University, Turkey
- Thomas DENK, Swedish Museum of Natural History, Sweden
- Tuna UYSAL, Selçuk University, Turkey
- Tuncay DİRMENÇİ, Balıkesir University, Turkey
- Uğur ÇAKILCIOĞLU, Munzur University, Turkey
- Utku AVCI, Recep Tayyip Erdoğan University, Turkey
- Xinli WEI, Chinese Academy of Sciences, China
- Yasaman SALMAKI, University of Tehran, Iran
- Yoichiro HOSHINO, Hokkaido University, Japan
- Yusuf KURT, Harran University, Turkey
- Yusuf MENEMEN, Kırıkkale University, Turkey
- Zongxin REN, Chinese Academy of Sciences, China

## ABSTRACTED AND INDEXED

- Thomson Reuters (SCI-E)
- EBSCOhost
- Elsevier BV
- MinAbs Online
- Ovid
- ProQuest

# CONTENTS

An ethnobotanical review on medicinal plants of the Lamiaceae family in Turkey .....	283
<b>Selami SELVİ, Rıdvan POLAT, Uğur ÇAKILCIOĞLU, Ferhat CELEP, Tuncay DİRMENCİ, Zafer Füsün ERTUĞ</b>	
Involvement of poly(ADP-ribose)ylation (PARylation) in the regulation of antioxidant defense system in <i>Arabidopsis thaliana</i> under salt stress .....	333
<b>Rengin ÖZGÜR UZİLDAY</b>	
Ellenberg ecological indicator values, tolerance values, species niche models for soil nutrient availability, salinity, and pH in coastal dune vegetation along a landward gradient (Euxine, Turkey).....	346
<b>Hamdi Güray KUTBAY, Burak SÜR MEN</b>	
Effect of seaweed-based liquid extracts on biomass production and lipid accumulation in <i>Nannochloropsis oculata</i> and <i>Dunaliella salina</i> .....	361
<b>Krishna Moorthy ABARNA, Rani VELU, Padmavathy PANDURANGAN, Jawahar PAULRAJ, Uma ARUMUGAM, Kalidas CHELLAPPA, Satya Prakash SHUKLA</b>	
Archaeobotanical evidence of agricultural products in the southern Mediterranean part of Turkey during the Bronze Ages from Tatarlı Höyük .....	379
<b>Salih KAVAK, Halil ÇAKAN</b>	
Morphological and phylogenetic studies on <i>Whalleya</i> , with <i>W. hainanensis</i> sp. nov. ....	396
<b>Yinhui PI, Sihan LONG, Youpeng WU, Lili LIU, Xu ZHANG, Qingde LONG, Yan LIN, Yingqian KANG, Jichuan KANG, Qirui LI</b>	
A new <i>Achillea</i> (Asteraceae) species from southwestern Turkey .....	406
<b>Gürkan SEMİZ, Tuna UYSAL, Meryem BOZKURT, Batıkan GÜNAL</b>	

---