



NOTULAE BOTANICAE
HORTI AGROBOTANICI
CLUJ-NAPOCA

2014 Volume 42, Issue 2

*A journal of the University of Agricultural Sciences and Veterinary Medicine,
Cluj-Napoca, Romania*

*Published by AcademicPres on behalf of
University of Agricultural Sciences and Veterinary Medicine, Cluj-Napoca
Romanian Academy of Agricultural and Forestry Sciences
Horticulture and Forestry Society from Transylvania*

Abstracted and/or indexed:

- Thomson Reuters Master Journal List - Science Citation Index Expanded and Journal o Citation Reports/Science Edition, <http://science.thomsonreuters.com> (IF 2013=0.476)
- Scopus (Elsevier), <http://www.scopus.com>
- Centre for Agriculture and Biosciences International (CABI), <http://www.cabi.org>
- Chemical Abstracts Service (CAS), <http://www.cas.org>
- Directory of Open Access Journals (DOAJ), <http://www.doaj.org>
- Index Copernicus, <http://www.indexcopernicus.com>
- Russian Scientific and Technical Information Institute (VINITI), <http://www.viniti.ru>
- ScientificCommons, <http://en.scientificcommons.org>
- Bielefeld Academic Search Engine (BASE), <http://www.base-search.net>
- Google Scholar, <http://scholar.google.com>
- Open J-Gate, <http://www.openj-gate.com>
- Academic research, citation reports and discussion lists getCITED, <http://www.getcited.org>
- Open Archives Initiative Protocol for Metadata Harvesting (OAIster), <http://www.oaister.org>
- China Educational Publications Import and Export Corporation (SOCOLAR), <http://www.socolar.com>
- Ulrich's Periodicals Directory, <http://www.ulrichsweb.com>
- Elton B Stephens COmpany (EBSCO), <http://www.ebscohost.com>

*First published 1965
Print ISSN 0255-965X, Electronic ISSN 1842-4309
www.notulaeobotanicae.ro*

Editorial Committee

Editor-in-Chief:	Radu E. SESTRĂŞ	rsestras@notulae.ro
Advisory Editors:	Doru PAMFIL	dpamfil@usamvcluj.ro
	Liviu Al. MĂRGHITAŞ	lmarghitas@usamvcluj.ro
	Viorel MITRE	mitre.viorel@usamvcluj.ro
Executive Editors:	Cătălina DAN	editor5@notulae.ro
	Orsolya BORSOI	editor2@notulae.ro
	Valentin SINGUREANU	editor3@notulae.ro
Associate Editors:	Sorana BOLBOACĂ	sbolboaca@umfcluj.ro
	Monica BOSCAIU	mobosnea@eaf.upv.es
	Lorentz JÄNTSCHI	lori@academicdirect.org
	Felicia LOGHIN	floghin@umfcluj.ro
	Lucica MIHALTE	lmihalte@notulae.ro
	Leon Sorin MUNTEAN	lmuntean@usamvcluj.ro
	Ioan NEGRUŢIU	ioan.negrutiu@ens-lyon.fr
	Ioana POP	popioana@usamvcluj.ro
	Melinda PUSKÁS	puskasmelinda@yahoo.com
	Ioan ROTAR	irotar@usamvcluj.ro
	Adriana F. SESTRĂŞ	adriana.sestras@usamvcluj.ro
	Doina STANA	doinastana2007@yahoo.com
Linguistic editors:	Mihaela RUSU	miky1000ro@yahoo.com
	Rodica Silvia STAN	ro7si@yahoo.com
Technical support:	Adriana D. BACIU	ady.baciu@yahoo.com
	Raluca CICEVAN	ralucacicevan@yahoo.com
	Bianca COSTIN	biancaa_costin@yahoo.com
	Dorottya DOMOKOS	ddomokos@usamvcluj.ro
	Mihail KANTOR	catrisu@yahoo.com
	Sorin T. SCHIOP	sorinschiop@yahoo.com
	Eliza Flavia LUCA	lucaflaviaeliza@yahoo.com
Alina M. VÎLCAN	alina_vilcan@yahoo.com	

Notice

To be cited **Not Bot Horti Agrobo**

The Editorial Board of Not Bot Horti Agrobo is not responsible for statements and opinions published; they represent the views of the authors or persons to whom they are credited. Publication of research information does not constitute a recommendation or endorsement of products involved.

Editorial Board

Name	Address	Field of Competence
Ioan VASILE ABRUDAN	Transilvania University, 1 Sirul Beethoven, 500123 Brasov, Romania; abrudan@unitbv.ro	Forestry, biodiversity, ecology
Douglas D. ARCHBOLD	University of Kentucky, Lexington, KY 40546-0091, USA; darchbol@uky.edu	Fruits and vegetables, postharvest storage
Valerian BALAN	State Agrarian University of Moldova, 44 Mircești 2049 Chișinău, Rep. Moldova; v.balan@uas.moldnet.md	Fruit crops, pomology
Dimitrios BILALIS	Agricultural University of Athens, Department of Crop Science, Iera Odos 75, 11855 Athens, Greece; bilalisdimitrios@yahoo.gr	Organic agriculture
Maria Y. BOROVIKOVA	Institute of Agriculture, Kyustendil, 2500, Bulgaria; iz_kn@infotel.bg	Environment–plant protection, pomiculture
Anca Dana BUZOIANU	“Iuliu Hatieganu” University of Medicine and Pharmacy Cluj-Napoca, 8 Victor Babes, Cluj-Napoca, Romania; abuzoianu@umfcluj.ro	Pharmacology and toxicology
Gheorghe CIMPOIES	State Agrarian University of Moldova, 44 Mircești St., 2049 Chișinău, Rep. Moldova; cimpoies@uas.md	Horticulture, fruit crops, pomology
Kamal CHOWDHURY	Clafin University, Orangeburg, SC, USA, United States; kchowdhury@clafin.edu	Biotechnology, molecular genetics
Lucian A. CURTU	Transilvania University, 1 Sirul Beethoven St., 500123 Brasov, Romania; lucian.curtu@unitbv.ro	Forestry, genetics, population and evolutionary
Francisco FUENTES	Ernest Mario School of Pharmacy Rutgers, The State University of New Jersey, USA; francisco.fuentes@rutgers.edu	Molecular genetics, epigenetics
Dan GAFTA	“Babeș-Bolyai” University, Faculty of Biology, 44 Gh. Bilascu, Romania; dgafta@bioge.ubbcluj.ro	Biodiversity, ecology, conservation
Marek GAJEWSKI	Warsaw Agricultural University, 166 Nowoursynowska, 02-787 Warsaw, Poland; marek_gajewski@sggw.pl	Vegetables and medicinal plants
Ioan HAȘ	Agricultural Research Station, 27 Agriculturii, 3350 Turda, Romania; ioanhas@yahoo.com	Cereals–breeding, physiology, quality
David HENSLEY	University of Arkansas, Fayetteville, AR 72701, USA; dhensley@uark.edu	Ornamental plants, arboriculture
Imre HOLB	Univ. Agricultural Sciences of Debrecen, 138 Böszörményi, 4032 Debrecen, Hungary; holb@helios.date.hu	Environment–plant protection
Maurizio LAMBARDI	cnr, nrc, ivalsa, Polo Scientifico, 10 via Madonna del Piano 10, 50019 Sesto Fiorentino, Firenze, Italy	Plant biotechnology, tissue culture, <i>in vitro</i> conservation
Amarendra NARAYAN MISRA	Fakir Mohan University, Vyasa Vihar, Balasore-756019, India; misraan@yahoo.co.uk	Bioinformatics, tissue cultures
Ioan NEGRUȚIU	Ecole Normale Supérieure, RDP-UMR 9938 CNRS, INRA, ENS, 69364 Lyon, France; ioan.negrutiu@ens-lyon.fr	Biotechnology– <i>in vitro</i> culture
Doru PAMFIL	University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 3-5 Mănăstur, 400372 Cluj-Napoca, Romania; dpamfil@usamvcluj.ro	Biotechnology– <i>in vitro</i> culture
Jaime PROHENS	Instituto de Conservación y Mejora de la Agrodiversidad Valenciana, Spain, jprohens@btc.upv.es	Plant breeding, statistics
Chen QIN	School of Life Science, Shanghai Univ., 99 Shangda R., Baoshan District, Shanghai, 200436, China; chenqincc@yahoo.com.cn	Plant physiology, biotechnology
Albert REIF	Faculty of Forestry and Environmental Sciences, Univ. Freiburg, Tennenbacher 4, D-79085, Freiburg, Germany; albert.reif@waldbau.uni-freiburg.de	Forestry, vegetation sciences, biodiversity
Klaus SCHALLER	Research Center Geisenheim, P.O. Box 1158, D-65358 Geisenheim, Germany; k.schaller@fa-gm.de	Ecology, viticulture
Radu E. SESTRĂȘ	University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 3-5 Mănăstur, 400372 Cluj-Napoca, Romania; rsestras@usamvcluj.ro	Horticultural–plant breeding, biostatistics
Carmen SOCACIU	University of Agricultural Sciences and Veterinary Medicine Cluj-Napoca, 3-5 Mănăstur, 400372 Cluj-Napoca, Romania; csocaciu@usamvcluj.ro	Chemistry–plant and food quality
Silvia STRĂJERU	Genetic Resources Bank of Suceava, 17 Bd. 1 Decembrie 1918, 5800 Suceava, Romania; genebank@suceava.astral.ro	Bioconservation, genetic resources
Oscar VICENTE	BMCP Universidad Politécnica de Valencia, Camino de Vera s/n. 46022 Valencia, Spain; ovicente@ibmcp.upv.es	Biochemistry, molecular biology
Zhang WEIGUANG	College of Food Science, Southwest Agricultural University, 216 Tianshengqiao, Beibei District, Chongqing, 400716, China; zwguang@hotmail.com	Food–fermentation, wine-making

Aims and scope

Notulae Botanicae Horti Agrobotanici Cluj-Napoca is a peer-reviewed biannual journal aimed at disseminating significant research and original papers on plant breeding, genetics, diversity and development of new methodologies that can be of interest to a wide audience of plant scientists in all areas of plant biology, agriculture, horticulture, and forestry. The journal encourages authors to frame their research questions and discuss their results in terms of the major questions of plant biology and agriculture, thereby maximizing the impact, spreading and value of their research. The papers must be of potential interest to a significant number of scientists and, if specific to a local situation, must be relevant to a wide body of knowledge in biology and agronomy. Articles should make a significant contribution to the advancement of knowledge or toward a better understanding of existing biological and agricultural concepts. An international Editorial Board advises the journal. There are no publishing fee and no pay for submission. The total content of the journal may be used for educational, non-profit purposes without regard to copyright. The distribution of the material is encouraged with the condition that the authors and the source (**Notulae Botanicae Horti Agrobotanici Cluj-Napoca** or **Not Bot Horti Agrobo**) are mentioned.

Submission

The journal offers to authors a fully web-enabled online manuscript submission, instructions for authors and review system available at <http://www.notulaebotanicae.ro>.

Papers are published in English (British spelling) and the authors are fully responsible for the originality of their papers and for the correctness of their subject-matter, language and formal attributes. A language reviewer revises English, but authors are strongly urged to have the papers reviewed linguistically prior to submission.

Manuscripts submitted must be edited, for clarity and conformity purposes according to Authors guidelines, and must not have been previously published or simultaneously submitted elsewhere.

The papers can be submitted online by the “senior author” (the main author, or the person who takes responsibility for the integrity of the work as a whole, from submission to the published article). The submission process is described on the web site.

An Author Statement, available on the website, should be enclosed by “senior author” declaring that the paper has not been published anywhere else, permission to reproduce the material, authorship credit, contributors and creditors for the integrity of the work as a whole, to avoid the conflicts of interest and scientist fraud, and respecting the ethical principles of publishing, research and scientific rights.

Publication Ethics and Publication Malpractice Policy

The journal respects the publication ethics norms, based on internationally accepted best practice guidelines for journal editors, notably the Committee on Publication Ethics ([COPE](#)), the World Association of Medical Editors ([WAME](#)), the International Committee of Medical Journal Editors ([ICMJE](#)), Consolidated Standards of Reporting Trials ([Consort](#)).

Prof. dr. Radu E. SESTRAS

Contents

Review Articles

- Diversity of Quinoa in a Biogeographical Island: a Review of Constraints and Potential from Arid to Temperate Regions of Chile**
Didier BAZILE, Enrique A. MARTÍNEZ, Francisco FUENTES..... 289
- Strategies to Identify Adaptive Genes in Hybridizing Trees like Oaks and Poplars**
Oliver GAILING..... 299
- Xanthophyll Esters in Fruits and Vegetables**
Andrea BUNEA, Carmen SOCACIU, Adela PINTEA..... 310
- Increase of Biofuel Crop Production in Romania over the Last Decades - Possible Impacts on Environment, Greenhouse Gas Emissions and Land Use**
Vasilica STAN, Gina FÎNTÎNERU, Viorel ION..... 325
- Research Articles**
- Grassland Degradation Decrease the Diversity of Arbuscular Mycorrhizal Fungi Species in Tibet Plateau**
Xiao-Bu CAI, Yue-Lin PENG, Min-Na YANG, Tao ZHANG, Qiang ZHANG..... 333
- Revegetation of Abandoned Sulphur Flotation Waste in Keçiöborlu, Isparta/Turkey: Heavy Metals Concentrations of Growing Media and *Agropyron elongatum* Grass**
Huseyin KALKAN, Mustafa KAPLAN, Şule ORMAN..... 340
- Impact of Climate on Vegetation Change in a Mountain Grassland – Succession and Fluctuation**
Florin PĂCURAR, Ioan ROTAR, Albert REIF, Roxana VIDICAN, Vlad STOIAN, Stefanie M. GÄRTNER, Robert B. ALLEN..... 347
- Effects of Saline and Alkaline Stresses on Growth and Physiological Changes in Oat (*Avena sativa* L.) Seedlings**
Zhanwu GAO, Jiayu HAN, Chunsheng MU, Jixiang LIN, Xiaoyu LI, Lidong LIN, Shengnan SUN..... 357
- Investigation of Comparative Regulation on Antioxidant Enzyme System under Copper Treatment and Drought Stress in Maize (*Zea mays* L.)**
Hatice CETINKAYA, Burcu SECKIN DINLER, Eda TASCI..... 363
- Nitrogen and Zinc Interaction Improves Yield and Quality of Submerged Basmati Rice (*Oryza sativa* L.)**
Hakoomat ALI, Zuhair HASNAIN, Ahmad N. SHAHZAD, Naeem SARWAR, Muhammad K. QURESHI, Shazia KHALIQ, Muhammad F. QAYYUM..... 372
- Calcium and Calmodulin Involve in Mycorrhizal and Root Development in Trifoliolate Orange Colonized by *Rhizophagus intraradices***
Qiang-Sheng WU, Qiu-Dan NI, Yan-Cong QUE, Wei HUANG..... 380
- Growth and Photosynthetic Response of Two Persimmon Rootstocks (*Diospyros kaki* and *D. virginiana*) under Different Salinity Levels**
Meral INCESU, Berken CIMEN, Turgut YESILOGLU, Bilge YILMAZ..... 386
- Influence of Harvest Term on the Content of Carvacrol, p-Cymene, γ -Terpinene and β -Caryophyllene in the Essential Oil of *Satureja Montana***
Aneta WESOŁOWSKA, Monika GRZESZCZUK, Dorota JADCZAK..... 392
- The Effect of Water Deficit and Nitrogen on the Antioxidant Enzymes' Activity and Quantum Yield of Barley (*Hordeum vulgare* L.)**
Arezu MOVLUDI, Ali EBADI, Soodabeh JAHANBAKHSI, M. DAVARI, Ghasem PARMOON..... 398
- Alleviation of Salt Stress in Seedlings of Black Glutinous Rice by Seed Priming with Spermidine and Gibberellic Acid**
Sumitahnun CHUNTHABUREE, Jirawat SANITCHON, Wattana PATTANAGUL, Piyada THEERAKULPISUT..... 405
- Kernel Quality of Some Sweet Corn Varieties in Relation to Processing**
Özlem ALAN, Gulcan KINACI, Engin KINACI, Zekiye BUDAK BASCIFTCI, Kenan SONMEZ, Yasemin EVRENOSOGLU, Imren KUTLU..... 414
- Genetic Relationships Among Representatives of *Dasypyrum*, *Secale* and *Triticum* Species Revealed with RAPD and ISSR Markers**
Agnieszka GRADZIELEWSKA, Mirosław TYRKA, Justyna LEŚNIEWSKA-NOWAK, Justyna NAZARUK..... 420

Molecular and Elemental Characterization of Selected Turkish Durum Wheat Varieties	
Erdogan E. HAKKI, Nurdan DOGRAR, Anamika PANDEY, Mohd. Kamran KHAN, Mehmet HAMURCU, Seyit A. KAYIS, Sait GEZGIN, Fatih ÖLMEZ, Mahinur S. AKKAYA.....	431
Effect of Salicylic Acid on the Growth, Photosynthetic Efficiency and Enzyme Activities of Leguminous Plant under Cadmium Stress	
Mohammed N. ALYEMENI, Qaiser HAYAT, Leonard WIJAYA, Shamsul HAYAT.....	440
Salt Stress and Homobrassinosteroid Interactions during Germination in Barley Roots	
Sevgi MARAKLI, Aslihan TEMEL, Nermin GOZUKIRMIZI.....	446
Genetic Diversity of High and Low Molecular Weight Glutenin Subunits in Algerian <i>Aegilops geniculata</i>	
Asma MEDOURI, Inès BELLIL, Douadi KHELIFI.....	453
Cytological Analyses in ‘Niagara Branca’ Grape and in Its Somatic Mutant ‘Niagara Rosada’	
Neiva Izabel PIEROZZI, Mara Fernandes MOURA.....	460
Cryopreservation and Acclimatization of <i>Lycopersicon esculentum</i> (Mill.) Genotypes	
Ana COSTE, Constantin DELIU, Sergiu VĂLIMĂREANU, Adela HALMAGYI.....	466
Optimization of BY2 Cell Suspension as a Stable Transformable System	
Zhou SHUMIN, Chu YANXIA, Zheng BANG, Zhang WEI.....	472
Cutting Type and IBA Treatment Duration Affect <i>Teucrium fruticans</i> Adventitious Root Quality	
Leo SABATINO, Fabio D’ANNA, Giovanni IAPICHINO.....	478
Regeneration of Haploid Plantlet through Anther Culture of Chrysanthemum (<i>Dendranthema grandiflorum</i>)	
Rayhanul Kabir KHANDAKAR MD, Jie YU, Sun-Kyung MIN, Mi-Kyoung WON, Hyun Gu CHOI, Ha-Seung PARK, Jong-Jin CHOI, Soo-Cheon CHAE, Ji-Youn JUNG, Kyu-Min LEE, Tae-Sung KIM, Yong-Jin PARK.....	482
Rapid Propagation of Sweet and Sour Cherry Rootstocks	
Dušica DORIĆ, Vladislav OGNJANOV, Mirjana LJUBOJEVIĆ, Goran BARAĆ, Jovana DULIĆ, Ankica PRANJIĆ, Krunoslav DUGALIĆ.....	488
Effects of Dual/Threefold Rootstock Grafting on the Plant Growth, Yield and Quality of Watermelon	
Yaoguo QIN, Cuiqin YANG, Jialong XIA, Jing HE, Xiaoli MA, Chuanyang YANG, Yangxia ZHENG, Xia LIN, Zhongqun HE, Zhi HUANG, Zesheng YAN.....	495
Quality Changes of Different Sweet Cherry Cultivars at Various Stages of the Supply Chain	
Fatih SEN, Rustu Efe OKSAR, Mina GOLKARIAN, Sevde YALDIZ.....	501
Effect of Light Intensity and Temperature on Growth and Quality Parameters of Grafted Vines	
Bülent KÖSE.....	507
Assessment of the Potential of 1-Methylcyclopropene Treatments to Maintain Fruit Quality of the Common Fig (<i>Ficus carica</i> L. cv. ‘Bursa Siyahi’) during Refrigerated Storage	
Okan OZKAYA, Songül ÇÖMLEKÇIOĞLU, Hatice DEMIRCIOĞLU.....	516
Determination of Major-to-Trace Minerals and Polyphenols in Different Apple Cultivars	
Doina TODEA, Oana CADAR, Dorina SIMEDRU, Cecilia ROMAN, Claudiu TANASELIA, Iuliu SUATEAN, Anca NAGHIU.....	523
Minor Volatile Compounds in Traditional Homemade Fruit Brandies from Transylvania-Romania, as Determined by GC-MS Analysis	
Teodora Emilia COLDEA, Carmen SOCACIU, Zaharie MOLDOVAN, Elena MUDURA.....	530
Nutritional and Nutraceutical Components of Commercial Eggplant Types Grown in Sinaloa, Mexico	
Guillermo NIÑO-MEDINA, Dolores MUY-RANGEL, Alfonso GARDEA-BÉJAR, Gustavo GONZÁLEZ-AGUILAR, Basilio HEREDIA, Manuel BÁEZ-SAÑUDO, Jorge SILLER-CEPEDA, Rosabel VÉLEZ DE LA ROCHA.....	538
Untargeted Metabolomics for Sea Buckthorn (<i>Hippophae rhamnoides</i> ssp. <i>carpatica</i>) Berries and Leaves: Fourier Transform Infrared Spectroscopy as a Rapid Approach for Evaluation and Discrimination	
Raluca M. POP, Anca D. BUZOIANU, Ioan V. RAȚI, Carmen SOCACIU.....	545
Phenolics Content, Antioxidant Activity and Color of Green Walnut Extracts for Preparing Walnut Liquor	
Sina COSMULESCU, Ion TRANDAFIR, Violeta NOUR, Mira IONICA, Felicia TUTULESCU.....	551
Romanian Wines Quality and Authenticity Using FT-MIR Spectroscopy Coupled with Multivariate Data Analysis	
Roxana BANC, Felicia LOGHIN, Doina MIERE, Florinela FETEA, Carmen SOCACIU.....	556
Growth of Scots Pine and Silver Birch Seedlings on Different Nursery Container Media	
Tekin MEMISOGLU, Fahrettin TILKI.....	565

Nutrition Intensity in Ternary Diagrams Interpretation for Some Ornamental Species Cultivated on Organic Substrate with Increased Biological Activity	
Roxana Maria MADJAR, Gina VASILE SCĂEȚEANU, Mircea MIHALACHE, Cătălina CĂLIN, Valentin Sebastian DAN, Adrian PETICILĂ.....	573
The Influence of Age, Location and Soil Conditions on the Allometry of Young Norway Spruce (<i>Picea abies</i> L. Karst.) Trees	
Ioan DUTCĂ, Filofteia NEGRUȚIU, Florin IORAȘ, Kevin MAHER, Viorel N.B. BLUJDEA, Liviu Alexandru CIUVĂȚ.....	579
Typology of Non-Wood Forest Products Based Enterprises in Serbia	
Dragan NONIĆ, Mersudin AVDIBEGOVIĆ, Jelena NEDELJKOVIĆ, Nenad RANKOVIĆ, Viorel MARINESCU, Florin IORAS.....	583
Forest Administration in Romania: Frequent Problems and Expectations	
Mihai MARINCHESCU, Aureliu Florin HALALISAN, Bogdan POPA, Ioan Vasile ABRUDAN.....	588