DOI identifiers and metadata quality improvement

(National Library of Serbia experience)

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National Library of Serbia

Belgrade, February 2026

Topics:

- What is DOI and what is it used for?
- Implementation of DOI in Serbia
- Why the National Library of Serbia?
- doiSerbia repository
- How copyrights are regulated
- Metadata and improvement of their quality
- Additional activities (online first, retraction, quarantine)
- Increasing visibility and citations
- Presence of our journals on the international scene (DOAJ, WoS, Scopus)
- Who else can provide DOI in Serbia?

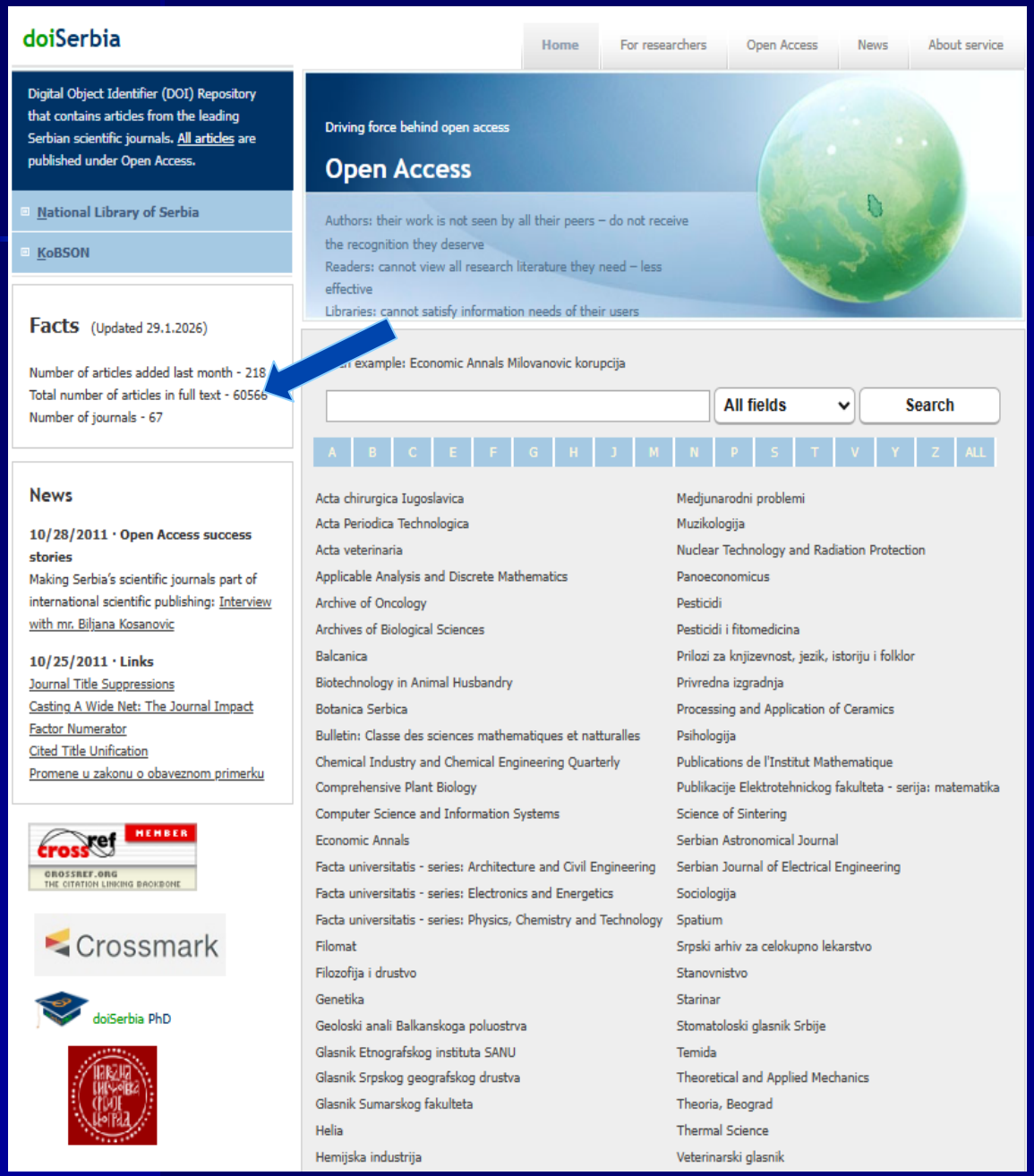
What is DOI?

- "unique alpha-numerical character assigned to a unique digital object (article, book chapter etc.)"

- "establishing permanent link to the Internet page where document is uploaded" (and it's constant maintenance)

- connecting data about articles, DOI numbers and url (web) addresses is accomplished trough service CrossRef (www.crossref.org). That service supports DOI numbers database, metadata and links to full text.

doiSerbia



- Repository of Serbian scientific journals
- Established in 2005 (at the beggining financially supported by EIFL, later by the Serbian ministry responsible for science)
- 61 title – 56 active
- Full text coverage from 2002 onward
- Over 60.000 articles
- All articles are equiped with DOI
- https://www.doiserbia.nb.rs

Rights and obligations

Ministry in charge for science

- determines the list of journals
- provides funding (archive from 2002 onward)
- enlists the National Library of Serbia

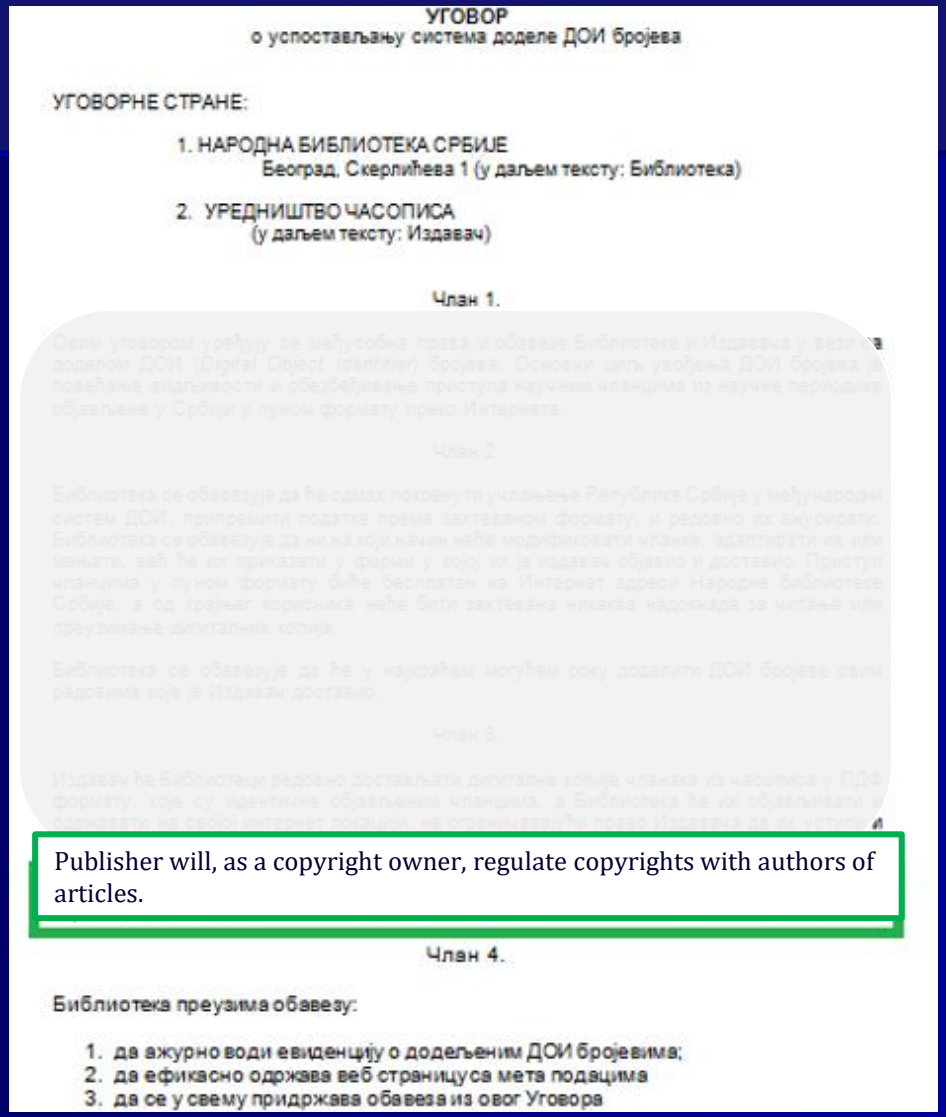
National Library of Serbia

-Implements the DOI system (creates and maintains a digital archive, assigns DOI numbers, creates metadata, upload XML files to CrossRef)
- Communicates with publishers
- Manages copyright issues (contracts with publishers)
- Ensures permanent access
- Improves the system

Journal's publisher

- Agree to the terms and conditions by signing the agreement
- Send us the issue content before printing
- Print the DOI number with each article
- Provide digital copies of newly published issues

Copyright regulation



УГОВОР
о успостављању система доделе ДОИ бројева

УГОВОРНЕ СТРАНЕ:

1. НАРОДНА БИБЛИОТЕКА СРБИЈЕ
Београд, Скерлићева 1 (у даљем тексту: Библиотека)

2. УРЕДНИШТВО ЧАСОПИСА
(у даљем тексту: Издавач)

Члан 1.

Publisher will, as a copyright owner, regulate copyrights with authors of articles.

Члан 4.

Библиотека преузима обавезу:

1. да ажурно води евиденцију о додељеним ДОИ бројевима;
2. да ефикасно одржава веб страницуса мета подацима
3. да се у свему придржава обавеза из овог Уговора

Metadata quality improvements

DoiSerbia - DoiSerbia – a system implemented in 2005, initially including 5 journals

In the following years, up to 2012, new titles were added (7–10 annually)
Today, there are 56 active journal titles

From 2005 to 2020, the XML schema contained only the following data:
- journal title
-article collation (volume, issue, pages)
-article title
-authors
-DOI identifier
-link to the landing page

The landing page contained richer metadata than the XML schema deposited to CrossRef (abstract, keywords, link to full text etc.).

doiSerbia landing page... 2019

doiSerbia

Home | For researchers | Open Access | News | About service

National library of Serbia

About the journal
Editorial policy
Instructions for authors
All issues
2019 OnLine-First
2018
2017
2016
2015

Journal of the Serbian Chemical Society 2011 Volume 76, Issue 4, Pages: 491-497
https://doi.org/10.2298/JSC100517043T
Full text (199 KB)
Cited by

Evaluation of the radical scavenging activity of a series of synthetic hydroxychalcones towards the DPPH radical

Todorova Iva T., Batovska Daniela I., Stamboliyska Bistra A., Parushev Stoyan P.

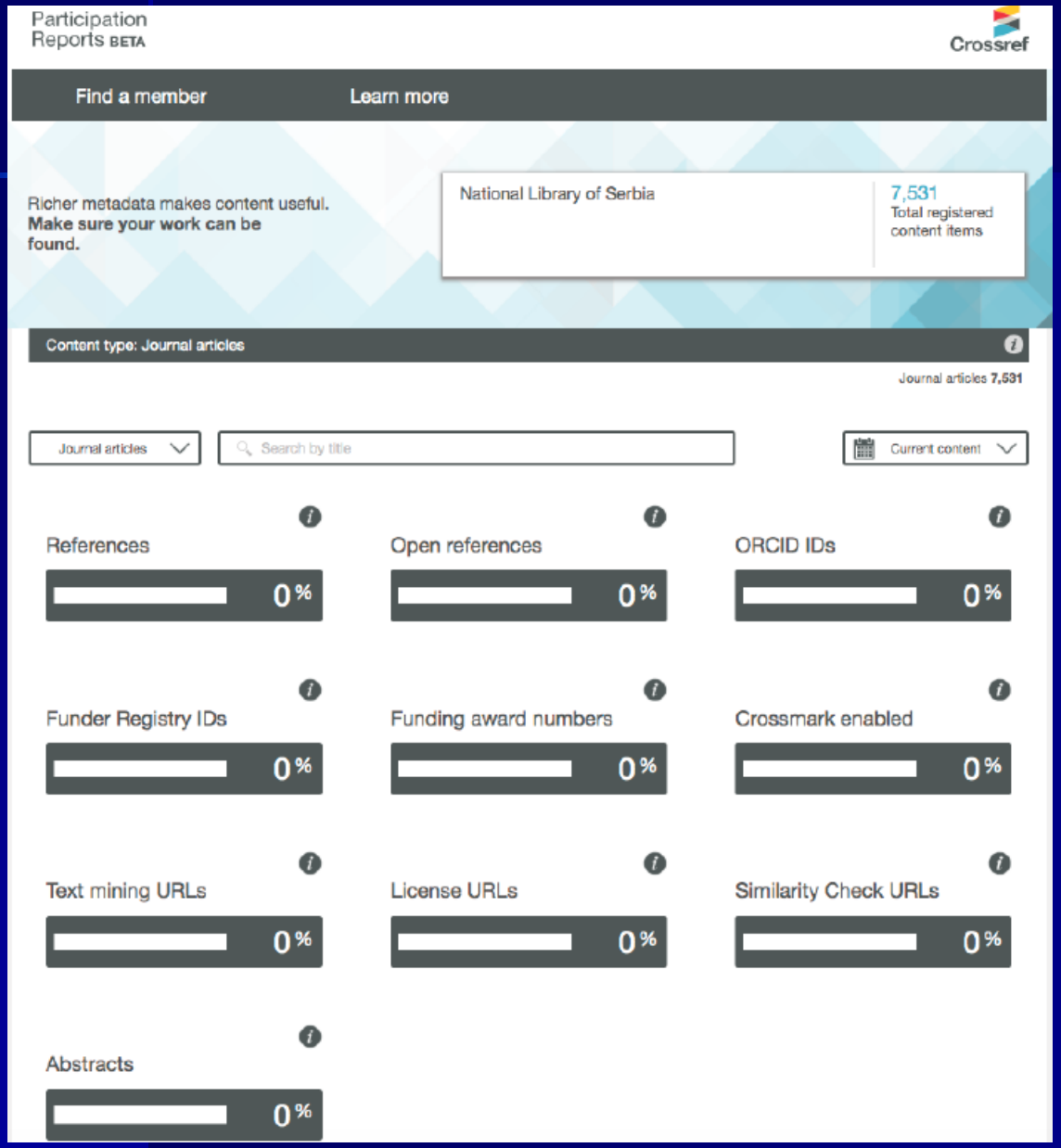
Sixteen hydroxychalcones were synthesized in sufficient purity by the Claisen-Schmidt condensation between appropriate acetophenones and aryl aldehydes. All the compounds were evaluated for their ability to scavenge the stable free 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical. Important structure-activity relationships were observed that strongly contribute to the knowledge for the design of DPPH radical scavenging chalcones. Relevant theoretical parameters were computed in an attempt to understand and explain the obtained experimental results.

Keywords: hydroxychalcones, 4′-chlorohydroxychalcones, synthesis, radical-scavenging activity, DPPH free radical

- Citation export
- Email this article

5

How good is your metadata?
Jun 2019
https://www.crossref.org/members/prep/



Following an online meeting about metadata quality with a Crossref representative in 2019, and based on the guidelines provided, we improved both the quality and scope of the data in the XML schema deposited with CrossRef

DOI display guidelines

Display Crossref DOI as a full link

Crossref DOIs should always be displayed as a full URL link in the form

`https://doi.org/10.xxxx/xxxxx`

and should not be preceded by `doi:` or `DOI:`.

Example: https://doi.org/10.5468/ogs.2016.59.1.1

Reference Linking

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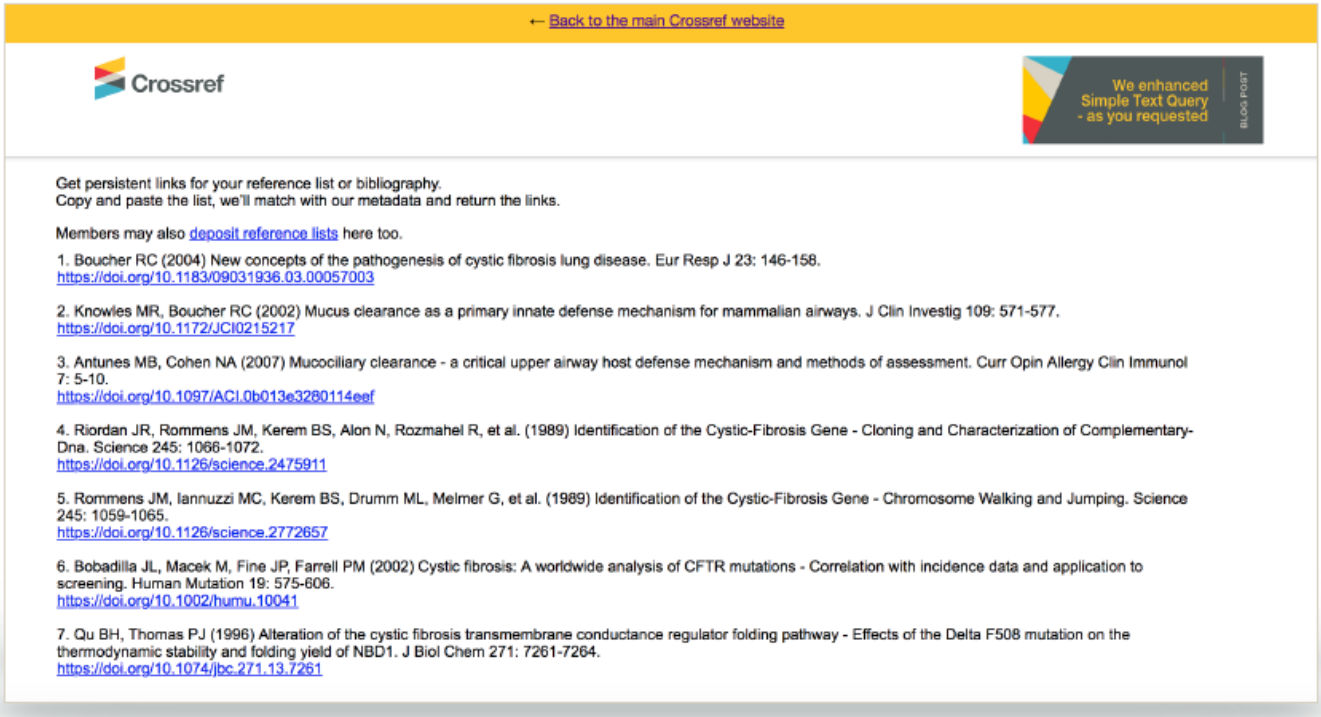
Christian, L. 2015. "A Passion Deficit: Occupational Burnout and the New Librarian: A Recommendation Report." *Southeastern Librarian* 62 (4): 2–11. http://digitalcommons.kennesaw.edu/seln/vol62/iss4/2

Simple Text Query - tool for looking up DOIs of references



https://doi.crossref.org/SimpleTextQuery

Metadata quality improvements 2020-2025

From 2020, we enriched metadata and the following attributes were added to the XML schema

1. Author affiliations
2. Author ORCID identifiers
3. Licenses
4. Abstracts (included info about Project/Funder)
5. DOI as a full link

From 2021, the information about the Project was separated from the Abstract field into a dedicated field (Project – i.e., Funder – only the Ministry responsible for science + DOI)

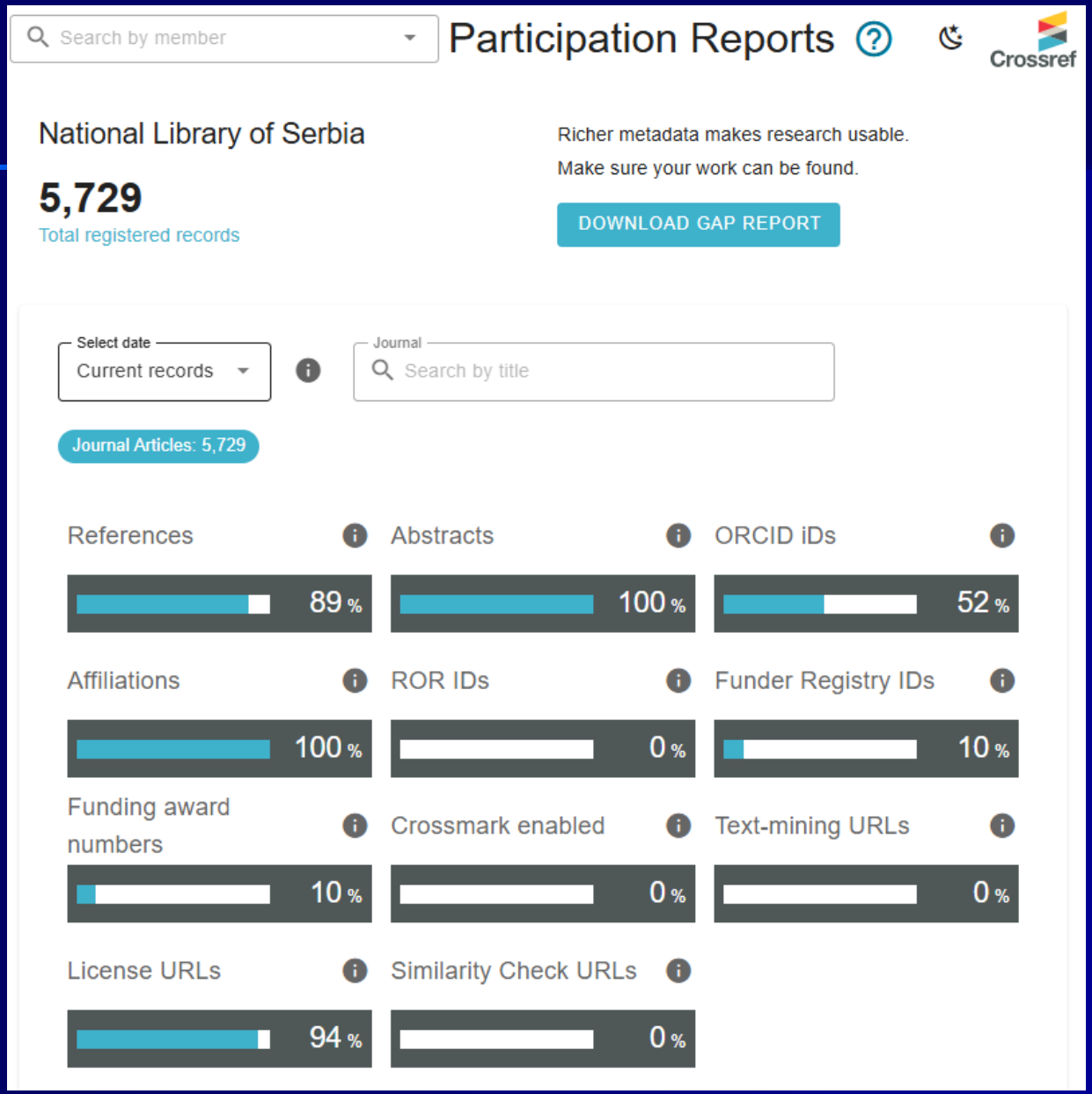
From 2022, references/literature were added to the XML schema
From 2025, a "Free to read" attribute was included in the XML schema

Planned metadata improvements from 2026 include the addition of ROR identifiers (initially only for affiliations from Serbia) and Text-mining

Reference Linking – assigning DOI numbers to references via CrossRef – is not planned at this time.

How good is your metadata?
Avgust 2025

https://www.crossref.org/members/prep/



Additional improvements / options – doiSerbia landing page 2025

About the journal
Editorial policy
Instructions for authors

Cobiss

All issues
2025 OnLine-First
2025
2024
Volume 89 Issue 12
Volume 89 Issue 11
Volume 89 Issue 10
Volume 89 Issue 9
Volume 89 Issue 7-8
Volume 89 Issue 6
Volume 89 Issue 5
Volume 89 Issue 4
Volume 89 Issue 3
Volume 89 Issue 2
Volume 89 Issue 1
2023
2022

Journal of the Serbian Chemical Society 2024 Volume 89, Issue 12, Pages: 1571-1585
https://doi.org/10.2298/JSC240913102M
Full text (4259 KB)
Cited by

Sustainable synthesis of samarium molybdate nanoparticles: A simple electrochemical tool for detection of environmental pollutant metol

Mutić Tijana *(University of Belgrade, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Belgrade, Serbia)*
Stanković Vesna *(University of Belgrade, Institute of Chemistry, Technology and Metallurgy, National Institute of the Republic of Serbia, Belgrade, Serbia)*
Milikić Jadranka *(University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia)*
Bajuk-Bogdanović Danica *(University of Belgrade, Faculty of Physical Chemistry, Belgrade, Serbia)*
Kalcher Kurt *(Institute of Chemistry, Analytical Chemistry, Karl-Franzens University, Graz, Austria)*
Ortner Astrid *(University of Graz, Institute of Pharmaceutical Sciences, Department of Pharmaceutical Chemistry, Graz, Austria)*
Manojlović Dragan *(University of Belgrade, Faculty of Chemistry, Belgrade, Serbia)*
Stanković Dalibor *(University of Belgrade, Faculty of Chemistry, Belgrade, Serbia), dalibors@ch.bg.ac.rs*

This study focused on creating a highly effective sensor for detecting and quantifying the nitrogen-organic pollutant metol (MTL). For this purpose, samarium molybdate (Sm2(MoO4)3) nanoparticles were synthesized using an eco-friendly, organic solvent-free and cost-effective hydrothermal method. These nanoparticles were used as a modifier of carbon paste electrodes (CPE), showing exceptional catalytic efficiency. Electrochemical measurements revealed that the developed electrode facilitates electron transfer processes and enhances the catalytic response. The resulting Sm2(MoO4)3/CPE sensor exhibited a broad linear range of 0.1–100 and 100–300 μM of MTL, with low detection and quantification limits of 0.047 and 0.156 μM, respectively, at pH 3 in a Britton–Robinson buffer solution (BRBS) as the supporting electrolyte. The findings from the analysis of real water samples from various sources using this sensor were encouraging, suggesting that this method could offer a cost- -effective, rapid and sensitive sensor for ambient MTL monitoring.

Keywords: environmental analysis, carbon paste electrode, organic pollutants, rare earth nanoparticles, electrochemical sensor

Project of the Ministry of Science, Technological Development and Innovation, Republic of Serbia, Grant no. 451-03-66/2024-03/200168 and Grant no. 451-03-66/2024-03/200026

Show references

- Citation export
- Email this article

Landing page – **mandatory** (Journals using OJS have a plugin and can host it on their OJS platform)

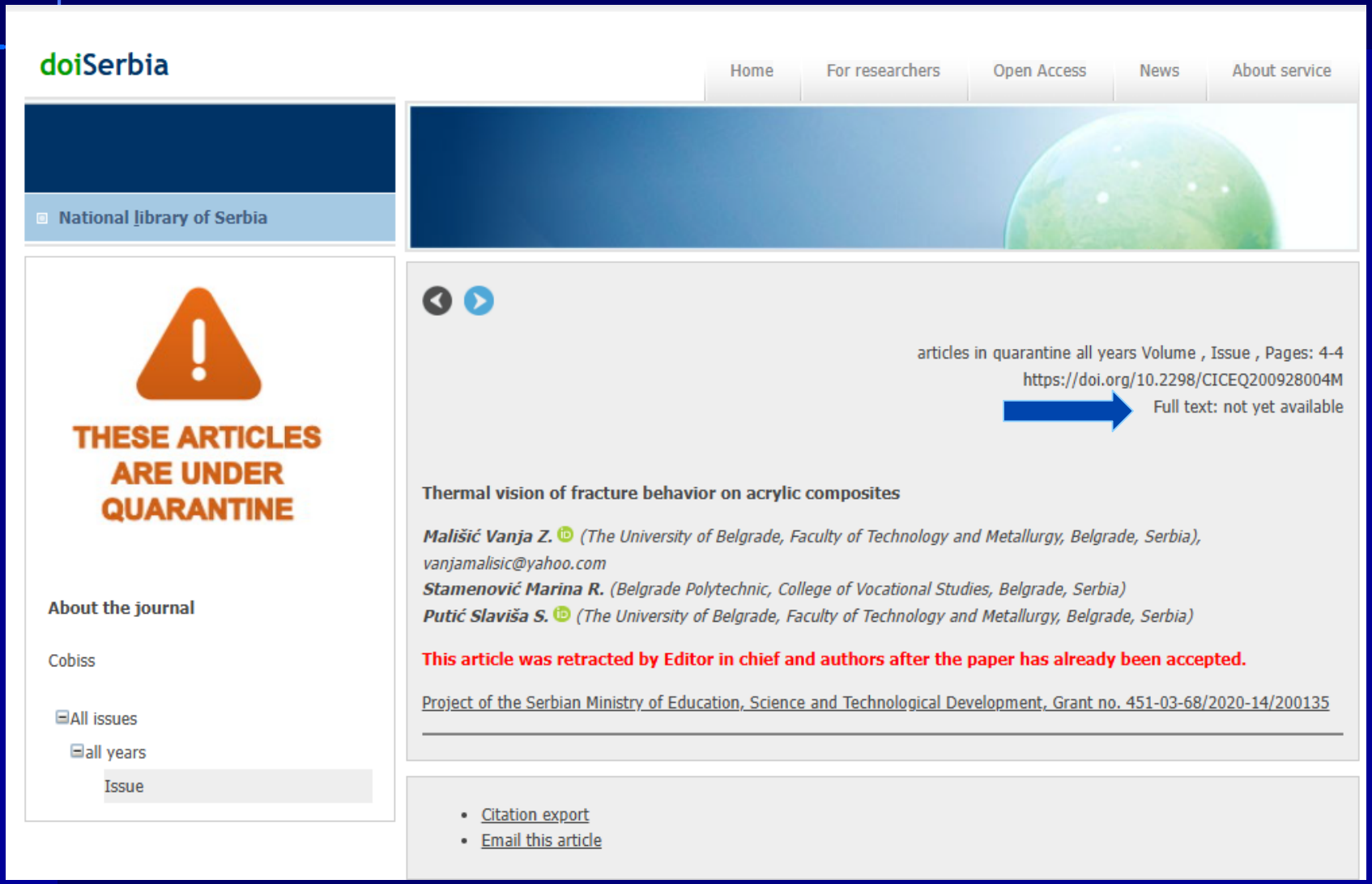
OnLine-First (Ahead of Print (AoP))

Useful links (Cited by, Citation export, Email this article)

Quarantine –

Articles included in “Articles in Quarantine” are those accepted for publishing by the editorial board and published in the Online-First regime, but subsequently withdrawn

- Transparent withdrawal notice



Retractions, Erratum, Corrigendum...

Journal of Agricultural Sciences, Belgrade 2015 Volume 60, Issue 1, Pages: 33-48
https://doi.org/10.2298/JAS1501033M

Full text (326 KB)

Cited by

Cluster and principle component analyses of maize accessions under normal and water stress conditions

Mustafa Hafiz Saad Bin *(Oilseeds Research Institute, AARI, Faisalabad, Pakistan)*
Farooq Jehanzeb *(Cotton Research Institute, AARI, Faisalabad, Pakistan)*
Ejaz-Ul-Hasan *(Oilseeds Research Institute, AARI, Faisalabad, Pakistan)*
Bibi Tahira *(Oilseeds Research Institute, AARI, Faisalabad, Pakistan)*
Mahmood Tariq *(Oilseeds Research Institute, AARI, Faisalabad, Pakistan)*

In the current set of an experiment, forty maize genotypes were assessed for drought associated traits. For evaluation of these traits, PC and correlation analyses were employed to obtain suitable parents that can be further exploited in future breeding programmes. Correlation analysis revealed some important associations among the traits studied. Fresh root length had positive and significant associations, but leaf temperature had a significant negative correlation with root density at both 40% and 100% moisture levels while root density had negative association at 100% and positive correlation at 40% moisture level with chlorophyll content. The positive correlation among these yield contributing traits suggested that these characters are important for direct selection of drought tolerant high yielding genotypes. Principal component (PC) analysis showed first 4 PCs having Eigen value >1 explaining 86.7% and 88.4% of the total variation at 40% and 100% moisture levels respectively with different drought related traits. Cluster analysis classified 40 accessions into four divergent groups. The members of clusters 1 and 2 may be combined in future breeding programmes to obtain genotypes/hybrids that can perform well under drought stress conditions. Members of cluster 3 may be selected on the basis of root density, leaf temperature, dry root weight and root shoot ratio by weight and can be combined with members of cluster 4 due to higher leaf temperature and root shoot ratio by length. The results showed that the germplasm having a wide genetic diversity can be thus utilized for future breeding programme to obtain drought tolerant maize genotypes/ hybrids for adaptation to water scarce areas.

This article has been retracted. Link to the retraction 10.2298/JAS1603303E

Keywords: Zea mays, cluster analysis, drought, genotypes, principle component analysis

Retractions, Erratum, Corrigendum...

Journal of Agricultural Sciences
Vol. 60, No. 1, 2015
Pages 33-48

DOI: 10.2298/JAS1501033M
UDC: 633.15:575.22
Original scientific paper

CLUSTER AND PRINCIPLE COMPONENT ANALYSES OF MAIZE ACCESSIONS UNDER NORMAL AND WATER STRESS CONDITIONS

Hafiz Saad Bin Mustafa[1], Jehanzeb Farooq[2*], Ejaz-ul-Hasan[1], Tahira Bibi[1] and Tariq Mahmood[1]

[1]Oilseeds Research Institute, AARI, Faisalabad, Pakistan
[2]Cotton Research Institute, AARI, Faisalabad, Pakistan

Abstract: In the current set of an experiment, forty maize genotypes were assessed for drought associated traits. For evaluation of these traits, PC and correlation analyses were employed to obtain suitable parents that can be further exploited in future breeding programmes. Correlation analysis revealed some important associations among the traits studied. Fresh root length had positive and significant associations, but leaf temperature had a significant negative correlation with root density at both 40% and 100% moisture levels while root density had negative association at 100% and positive correlation at 40% moisture level with chlorophyll content. The positive correlation among these yield contributing traits suggested that these characters are important for direct selection of drought tolerant high yielding genotypes. Principle component (PC) analysis showed first 4 PCs having Eigen value >1 explaining 77% and 88.4% of the total variation at 40% and 100% moisture levels respectively with different drought related traits. Cluster analysis classified 40 accessions into four divergent groups. The members of clusters 1 and 3 may be combined in future breeding programmes to obtain genotypes/hybrids that can perform well under drought stress conditions. Members of cluster 3 may be selected on the basis of root density, leaf temperature, dry root weight and root shoot ratio by weight and can be combined with members of cluster 4 due to lower leaf temperature and root shoot ratio by length. The results showed that the germplasm having a wide genetic diversity can be thus utilized for future breeding programme to obtain drought tolerant maize genotypes/ hybrids for adaptation to water scarce areas.

Key words: *Zea mays*, cluster analysis, drought, genotypes, principle component analysis.

RETRACTED

*Corresponding author: e-mail: jehanzeb1763@hotmail.com

Retractions, Erratum, Corrigendum...

Journal of Agricultural Sciences, Belgrade 2016 Volume 61, Issue 3, Pages: 303-304
https://doi.org/10.2298/JAS1603303E

Full text (71 KB)

Retraction: Cluster and principle component analyses of maize accessions under normal and water stress condition, published in Journal of Agricultural Sciences, 2015, vol. 60, issue 1, pp. 33-48

Editorial

We would like to inform you that the paper "Cluster and principle component analyses of maize accessions under normal and water stress condition" by Hafiz Saad Bin Mustafa, Jehanzeb Farooq, Ejaz-ul-Hasan, Tahira Bibi and Tariq Mahmood, published in Journal of Agricultural Sciences, 2015, Volume 60, Issue 1 (pp. 33–48), has been retracted, that is, refuted and is no longer in the archives of this journal.

Link to the retracted article 10.2298/JAS1501033M

Retractions, Erratum, Corrigendum...

Journal of Agricultural Sciences
Vol. 61, No. 3, 2016
Pages 303-304

DOI: 10.2298/JAS1603303E

RETRAKCIJA: CLUSTER AND PRINCIPLE COMPONENT ANALYSES OF MAIZE ACCESSIONS UNDER NORMAL AND WATER STRESS CONDITION
(2015, VOL. 60, BR. 1, STR. 33–48)

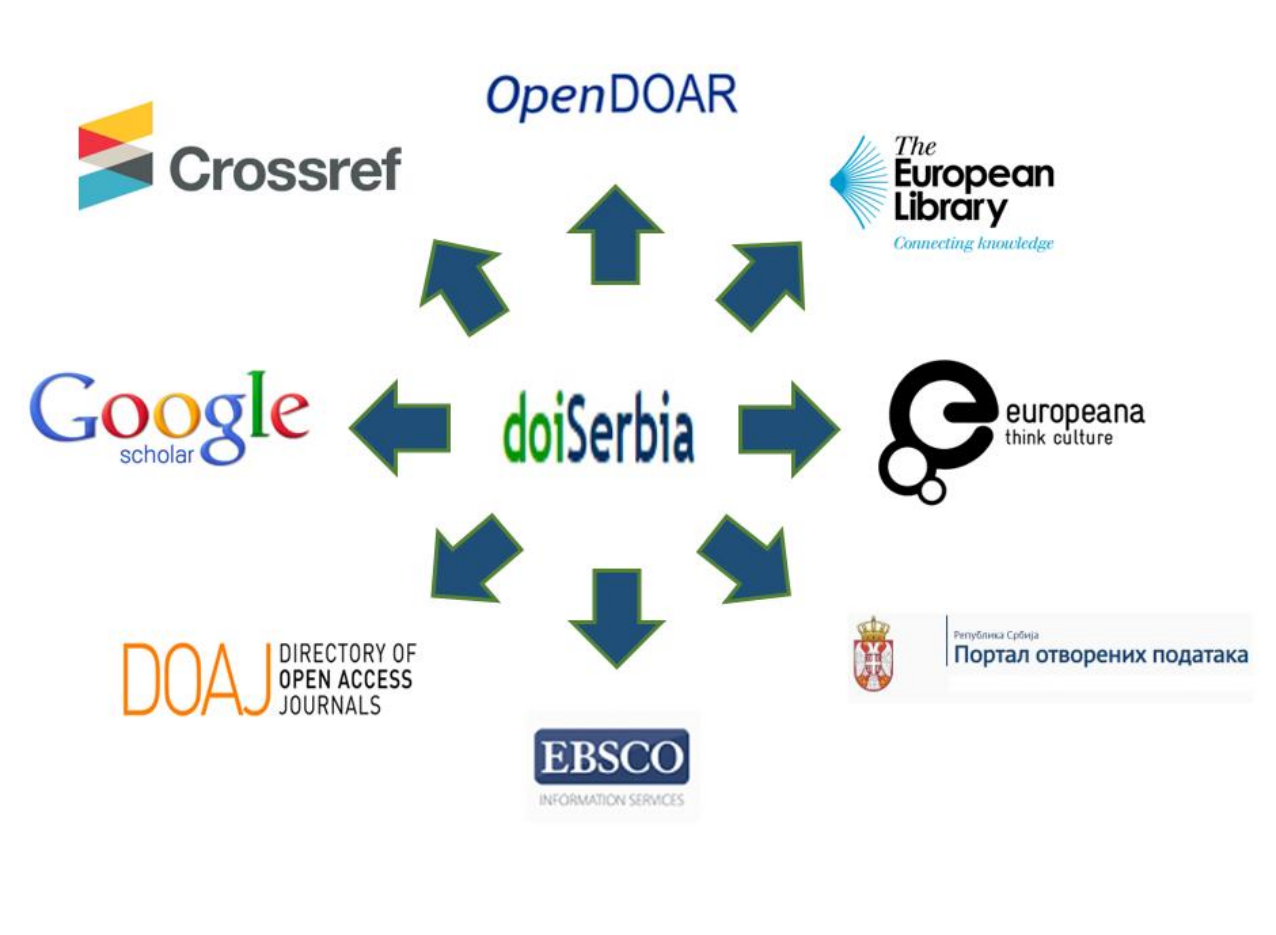
Uredništvo časopisa *Journal of Agricultural Sciences*

Sažetak

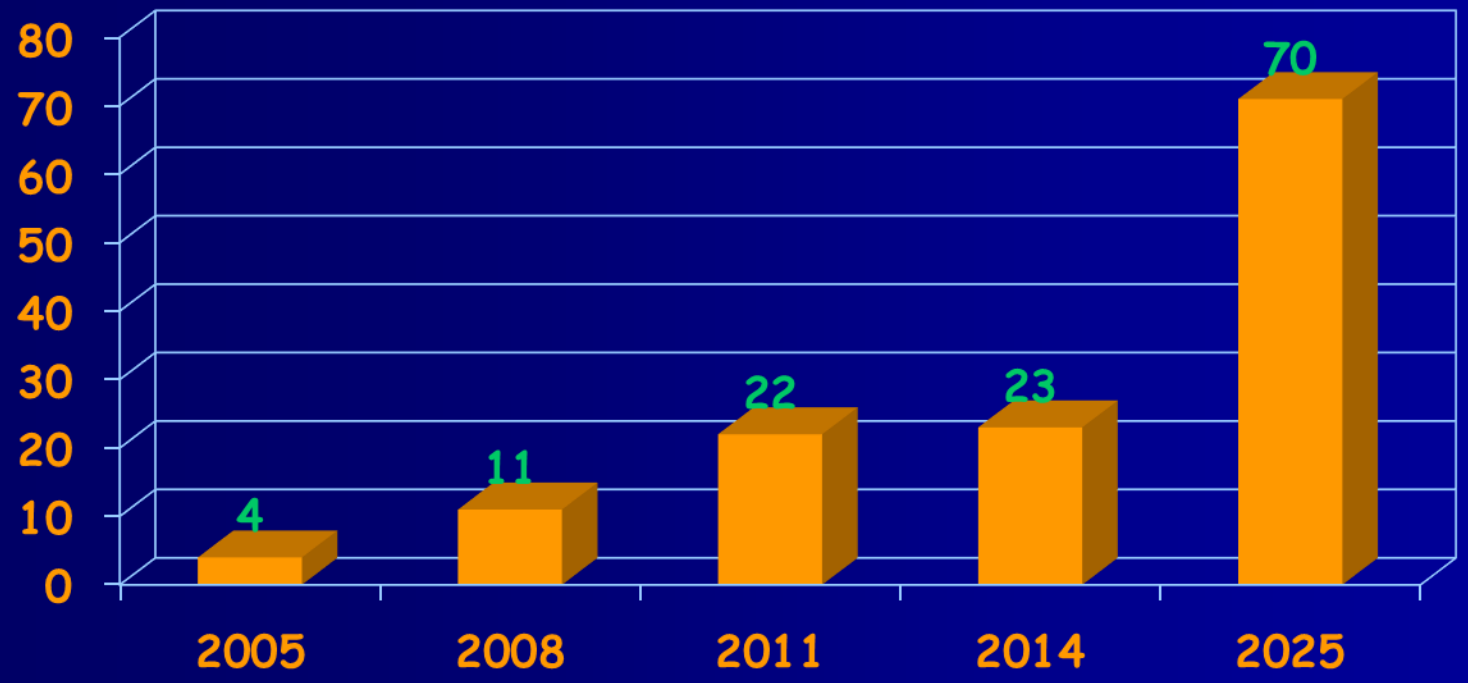
Poštovane koleginice i kolege, uvaženi čitaoci,

Obaveštavamo vas da je rad pod naslovom „Cluster and principle component analyses of maize accessions under normal and water stress condition", autora Hafiz Saad Bin Mustafa, Jehanzeb Farooq, Ejaz-ul-Hasan, Tahira Bibi i Tariq Mahmood, objavljen u broju 1 časopisa *Journal of Agricultural Sciences* za 2015. godinu (str. 33–48), povučen, odnosno poništen, i ne nalazi se u bazi podataka ovog časopisa. Time se onemogućava navođenje ovoga rada u bibliografiji potpisanih autora i sprečava njegovo citiranje. Razlog odluke je činjenica da su autori na neadekvatan način iskoristili delove teksta autora Frasat Saeed, Jehanzeb Farooq, Abid Mahmood, Muhammad Riaz, Tassawar Hussain and Abdul Majeed, „Assessment of genetic diversity for Cotton leaf curl virus (CLCuD), fiber quality and some morphological traits using different statistical procedures in *Gossypium hirsutum* L" objavljenog u broju 3 časopisa *Australian Journal of Crop Science*, za 2014. godinu (str. 442–447), kao i delove teksta autora Mustafa, Hafiz Saad Bin, Muhammad Aslam, Ejaz-ul Hasan, Fida Hussain i Jehanzeb Farooq rada pod naslovom „Genetic variability and path coefficient in maize (Zea mays L.) genotypes" objavljenog u broju 1 časopisa *The Journal of Agricultural Sciences* (Sri Lanka), za 2014. godinu (str. 37–43). Imajući u vidu da su propusti koje su načinili autori u suprotnosti s etičkim kodeksom naučnoistraživačkog rada, a polazeći od uređivačke politike časopisa, Redakcija se odlučila na opoziv.

Increasing visibility and citations of doiSerbia journals ...



... has led to an increased number of journals being indexed in international citation databases (WoS, Scopus)



Presence of doiSerbia Journals on the International Scene
2025 overview

DOAJ Serb / doiSerbia – 200+/33

WoS Serb / doiSerbia – 70/33

Scopus Serb / doiSerbia 111/44

Who else can provide DOI in Serbia?
... several new platforms/providers

- CEON/CEES - Centre for Evaluation in Education and Science (SCIndex - Srpski citatni indeks)
- University of Belgrade – Faculty of Philology (doiFil)
- University Library in Kragujevac (DOI UBKG)
- Several other providers (scientific institutes)
- Individual journals

Key facts:

- In 2024, Serbia had over 300 journals assigning DOIs to their articles.
- Journals co-funded by the Government of Serbia are obliged/recommended to assign DOIs and to support/adopt a Diamond OA policy.
- 2005 – 5 journals assigned DOIs
- 2025 – 300+ journals

To summarize

Regulate copyright issues with your DOI provider

Establish Landing page (OJS plugin)

Assign DOI and print it as a full link on landing page and in every article

Enrich your metadata (“Free to read” attribute important)

Deposit your metadata in OA repositories to increase journal’s visibility and citation

Thank you for your attention ☺

www.doiserbia.nb.rs