



FORS²D

FORESTRY SCIENCE FOR SUSTAINABLE DEVELOPMENT

BOOK OF ABSTRACTS

**"Perspectives of forestry and related sectors
as drivers of sustainable development in the post-Covid era"**

**Banja Luka, the Republic of Srpska / Bosnia and Herzegovina
29–30 September 2022**

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BOOK OF ABSTRACTS

International Scientific Conference

FORESTRY SCIENCE FOR SUSTAINABLE DEVELOPMENT - FORS2D

Perspectives of forestry and related sectors as drivers of sustainable development in the post-Covid era

Publisher

Faculty of Forestry, University of Banja Luka

Stepe Stepanovića 75A, 78 000 Banja Luka, the Republic of Srpska / Bosnia and Herzegovina

Tel/Fax: +387 51 460 550

<http://www.sf.unibl.org>

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CIP - Каталогизacija u publikaciji
Nародна и универзитетска библиотека
Републике Српске, Бања Лука

630(048)
502.131.1(048)

INTERNATIONAL Scientific Conference "Forestry Science for Sustainable Development - FORS2D". Perspectives of forestry and related sectors as drivers of sustainable development in the post-Covid era (2022 ; Banja Luka)

Book of Abstracts / International Scientific Conference "Forestry Science for Sustainable Development - FORS2D", Perspectives of forestry and related sectors as drivers of sustainable development in the post-Covid era, Banja Luka, the Republic of Srpska / Bosnia and Herzegovina 29–30 September 2022 ; [editors Marijana Kapović-Solomun ... [et al.]]. - Banja Luka : Faculty of Forestry, University of Banja Luka, 2022 ([S. l. : s. n.]). - 173 crp. ; 25 cm

ISBN 978-99938-56-51-1

COBISS.RS-ID 136776705

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FORESTRY SCIENCE FOR SUSTAINABLE DEVELOPMENT

"Perspectives of forestry and related sectors as drivers of sustainable development in the post-Covid era"

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Foreword

Dear participants and friends,

The International Scientific Conference "**Forestry science for sustainable development FORS²D – Perspectives of forestry and related sectors as drivers of sustainable development in the post-Covid era – FORS²D**" in Banja Luka is held on the occasion of important Jubilee (30 years) of the Faculty of Forestry, University of Banja Luka, and 30 years of PFE "Šume Republike Srpske" a.d. Sokolac, in cooperation with FAO (*United Nations Food and Agriculture Organization*). Considering global changes that we are facing, the importance of forests cannot be underestimated. We depend on forests for our survival, from the air we breathe to the wood we use, but without education and scientific research we cannot promise sustainable development or sustainable forestry. Besides basic functions of forests needed for humans, forests also offer climate change mitigation, watershed protection, prevent soil erosion and torrential floods that we are frequently facing in recent decades. Unfortunately, despite our dependence on forests, we are still allowing them to disappear.

This Conference will give an opportunity for participants to address important issues related to forestry, exchange recent research, knowledge and experiences in forestry and related fields, to establish functional international cooperation among institutions, to improve cooperation between forestry science and practice and finally to forestry as important sector for human well-being at local, national and global level.

The Conference is organized in nine sessions along different themes. Together there are five plenary lectures, 64 oral presentations and 64 poster contributions, with more than 120 participants.

As announced, authors, the reviewed and accepted papers are going to be published in the Bulletin of the Faculty of Forestry, University of Banja Luka (<http://glasnik.sf.unibl.org>).

We wish you a very successful Conference and pleasant stay in Banja Luka.

Chair of the Organization Committee
Marijana Kapovic Solomun

Predgovor

Dragi učesnici i prijatelji,

Međunarodna naučna konferencija „Šumarska nauka za održivi razvoj FORS²D – Perspektive šumarstva i povezanih sektora kao pokretača održivog razvoja u post-kovid eri – FORS²D” se održava u Banjoj Luci povodom značajnog jubileja (30 godina) Šumarskog fakulteta Univerziteta u Banjoj Luci i 30 godina JPŠ “Šume Republike Srpske” a.d. Sokolac, u saradnji sa FAO (Organizacija Ujedinjenih nacija za hranu i poljoprivredu). Imajući u vidu globalne promjene kojima se suočavamo, značaj šuma mora biti posebno istaknut. Opstanak čovječanstva zavisi od šuma od vazduha koji udišemo do drveta koje koristimo kao materijal, ali bez obrazovanja i naučnog istraživanja ne možemo obećati održivi razvoj ili održivo šumarstvo. Pored osnovnih funkcija šuma potrebnih čoveku, šume takođe nude ublažavanje klimatskih promjena, zaštitu riječnih slivova, sprječavanje erozije zemljišta i bujičnih poplava sa kojima se često suočavamo poslednjih decenija. Nažalost, uprkos činjenici da zavisimo od šumskih ekosistema, mi i dalje dozvoljavamo da one nestaju.

Ova Konferencija će pružiti priliku učesnicima da se pozabave važnim pitanjima vezano za šumarstvo, razmijene novija istraživanja, znanja i iskustva u šumarstvu i srodnim oblastima, da uspostave funkcionalnu međunarodnu saradnju među institucijama, da unaprijede saradnju šumarske nauke i struke i konačno da istaknu šumarstvo kao važan sektor za ljudsko blagostanje na lokalnom, nacionalnom i globalnom nivou.

Konferencija je organizovana u devet sesija na različite teme. Učesnicima će se obratiti pet eminentnih plenarnih predavača, 64 usmenih izlaganja i 64 poster priloga, sa više preko 120 učesnika. Kako je najavljeno, recenzirani i prihvaćeni radovi biće objavljeni u Glasniku Šumarskog fakulteta Univerziteta u Banjoj Luci (<http://glasnik.sf.unibl.org>).

Želimo Vam uspješnu Konferenciju i ugodan boravak u Banja Luci.

Predsjednica Organizacionog odbora

Marijana Kapović Solomun

THEMATIC AREAS

1. Forest and sustainable development in light of climate change
2. Nature-based solutions
3. Let's green, be seen
4. A modern and competitive forestry sector
5. Innovative value chains and sociological aspects in forestry and related sectors

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ORIGIN AND SPATIAL DISTRIBUTION OF HEAVY METALS IN MOUNTAIN BEECH FORESTS SOILS ACROSS EUROPE

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ABSTRACT

The objectives of this research were to investigate the concentration; characterize the distribution; and determine the sources of heavy metals in European mountain beech forest soils. Total of 37 soil samples were collected from 11 countries (Bosnia and Herzegovina, Bulgaria, Czech Republic, Germany, Italy, Poland, Romania, Serbia, Slovakia, Slovenia and Spain). Concentrations of As, Cd, Co, Cr, Cu, Ni, Pb, Zn, and Hg were in ranges of 0.98-22.98 mg kg⁻¹, 0.99-6.03 mg kg⁻¹, 2.51-26.01 mg kg⁻¹, 4.22-83.42 mg kg⁻¹, 11.25-39.77 mg kg⁻¹, 4.79-56.34 mg kg⁻¹, 1.38-91.76 mg kg⁻¹, 32.50-252.20 mg kg⁻¹, 0.20-5.07 mg kg⁻¹, respectively. Hotspots of heavy metals were observed in luvisol and rendzina soils developed on carbonate bedrock. Multivariate analyses discriminated between component 1 with a large positive associations of As, Cd, Cr, Zn, Hg, Pb, CaCO₃, Corganic, pH, EC, Mg, and Ca and component 2 with a large positive associations of Co, Cr, Cu, Ni, clay, Al, and Fe. Positive matrix factorization Factor 1 was defined by As, Pb, and Zn, Cu and Hg provided similar contributions for Factors 1 and 2. Cd, Co, Cr, and Ni provided the highest percentage contributions for Factor 2. Pollution index, Enrichment factor of Cr, Hg, As, Pb, Ni, Cd, Cu, Zn, and Co ranges: 0.05–1.17, 4.48–246.63, 0.01–3.21, 0.06–2.97, 0.18–3.40, 4.30–81.62, 0.56–3.20, 0.52–3.83 and 0.21–3.81, respectively.

Key words: geostatistical analysis; principal component analysis; source apportionment; enrichment factor

Acknowledgements: The authors would like to thank the Ministry of Education, Science and Technological Development of the Republic of Serbia for financial support (Grant No: 451-03-68/2022-14/200026). Sample collection and Laboratory analyses were done as a part of COST action Climate-smart Forestry in Mountain Region CA15226 CLIMO.