XXII euro FOOD chem

BOOK OF ABSTRACTS

XXII Congress

EuroFoodChem

June 14-16, 2023 | Belgrade, Serbia

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Serbian Academy of Sciences and Arts
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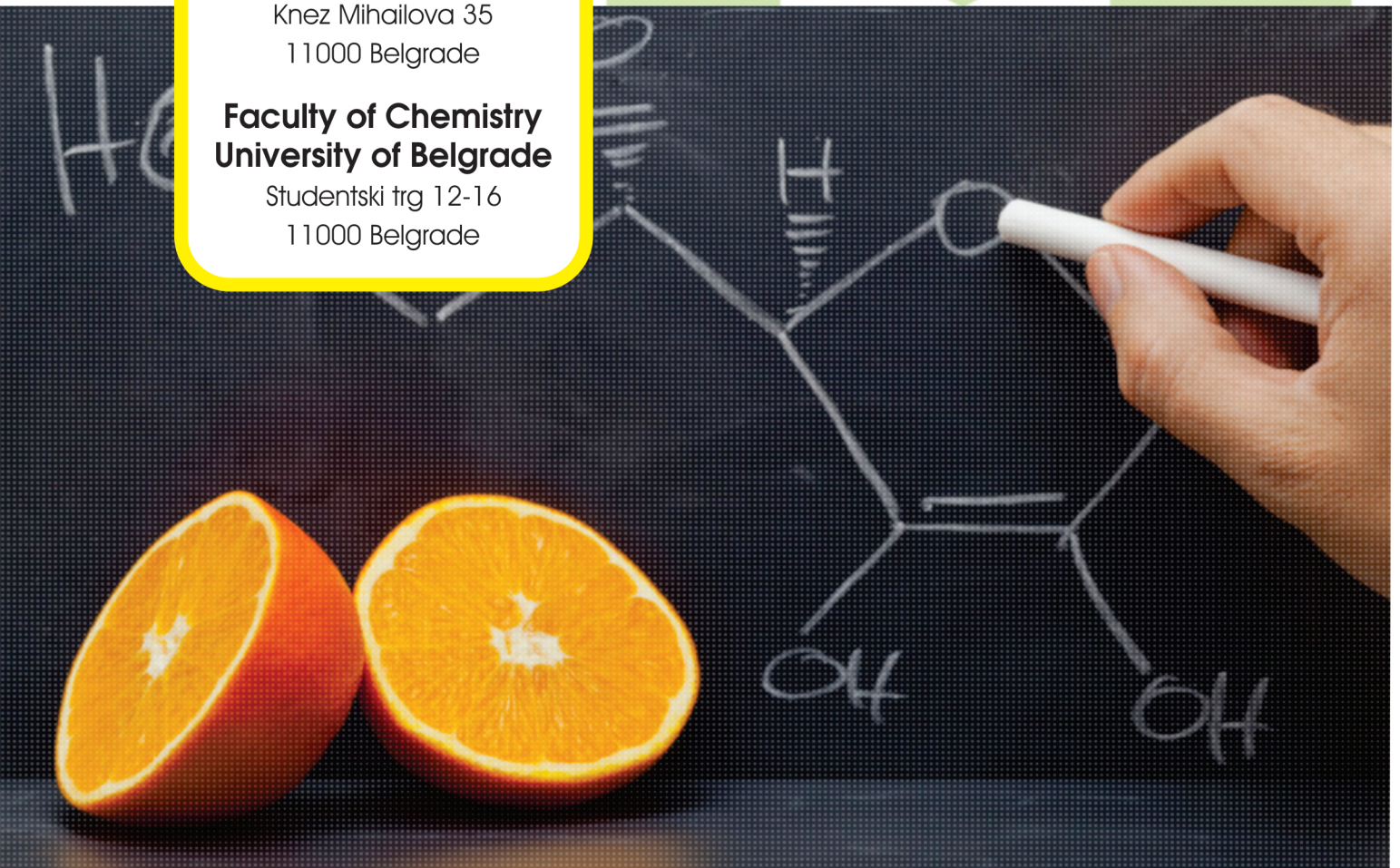

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CONGRESS TOPICS

- **Food composition, quality, and safety**
- **Food sustainability, including byproducts valorization**
- **Novel foods**
- **Food and health, functional foods, and ingredients**
- **Chemical reactions and interactions of food components**
- **Chemical changes in food under processing and storage**
- **Food adulteration, authenticity, and traceability**
- **Novel methods for food chemistry**
- **Food contaminants**

GENERAL INFORMATION

Official Language:
English. No simultaneous translation will be provided:

Registration Desk opening times.

Day 1: June 14, 2023, 8:30-10:30h
Day 2: June 15, 2023, 8:30-10:30h
Day 3: June 16, 2023, 8:30-10:30h

The Registration Desk is situated in Serbian Academy of Sciences and Arts
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Certificate of Attendance: Will be given at the registration desk and sent by email after the end of the Congress.

Role of soybean - millet intercropping and bio-fertilizer in managing potential bio-availability of essential elements

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The potential bio-availability of minerals from food, i.e. agricultural products, is mainly subjected to the concentration of anti-nutrients, due to its high affinity to bind elements and make them unavailable for humans from digestive tract. Thus, increasing the mineral concentration in grain is just one point in the string that can improve food quality, but reduction in concentration of anti-nutrients, such as phytates, is of great importance, too. [1,2] As intercropping and use of bio-fertilizer represent integrative part of sustainable agriculture which influence nutrient use efficiency [3,4], their combination seems to be a good way to manage nutrients uptake and accumulation, and anti-nutrients concentration in grain. Therefore, this research aimed to examine the impact of soybean - common millet arrangement in intercropping, together with bio-fertilizer, on potential bioavailability of essential elements in grain. A two-year field experiment was conducted with soybean and common millet. Mono-crops (T1 - soybean, T2 - millet), as well as three planting patterns of intercrop (T3 - alternating rows of soybean and common millet; T4 - alternating strips of two rows of soybean and two rows of millet and T5 - alternating strips of two rows of soybean and four rows of millet) were set up in 2018 and 2020. The bio-fertilizer Coveron (BF) (containing mycorrhizal fungi, Trichoderma and plant growth-promoting rhizobacteria) was also included in same combinations, as a subplots, as well as variant without BF (BFϴ). After determination of concentrations in grains, the molar ratios between phytic acid (Phy) and magnesium (Mg), calcium (Ca), iron (Fe) and zinc (Zn) were evaluated. Results showed that intercropping and bio-fertilizer significantly affected molar ratios between phytic acid and essential elements. Regarding to the soybean, all 4 ratios showed smaller values in intercropping comparing with mono-crops (both in plots with and without fertilizer). Intercrops + BFϴ decreased Phy/Ca, Phy/Mg and Phy/Fe ratios down to the 0.31 (T4 and T5), 0.16 (T4) and 14.03 (T4), respectively, while intercrops + BF decreased Phy/Zn ratio down to the 25.25 in T3 + BF. These lowest values could be related to lower accumulation of Phy and greater accumulation of minerals in intercropped soybean, due to the presence of cereal (millet) and its ability to excrete phytosiderophores, which promotes mineral uptake [5]. Nevertheless, situation for common millet was different. Ratios of Phy/Ca, Phy/Mg and Phy/Zn had the lowest values in mono-crops (both in BF and BFϴ variants), while the value of Phy/Fe was the lowest in T3 + BF (23.88). Such results suggest soybean - common millet intercropping as a good sustainable agricultural practice to enhance bio-availability of essential elements in grain of soybean. On the other side, positive impact of BF was pronounced in millet, enhancing potential bio-availability of examined minerals in grain by lowering values of all 4 ratios. These findings can be connected to beneficial effect of microbes on nutrients uptake by cereals [6], highlighting the tested combination of fungi and plant growth-promoting rhizobacteria as a sustainable strategy to increase grain quality. However, although this research proved positive effects of soybean - common millet intercropping and bio-fertilizer on potential bio-availability of essential elements, further research is needed to determine the most suitable combination for increased quality of both crops.

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References:

1. M. Samtiya, R.E. Aluko, T. Dhewa, Food Production, Processing and Nutrition, 2 (2020) 6.
2. M. Garg, N. Sharma, S. Sharma, P. Kapoor, A. Kumar, V. Chunduri, P. Arora, Frontiers in Nutrition, 5 (2018) 12.
3. I. Chamkhi, S. Cheto, J. Geistlinger, Y. Zeroual, L. Kouisni, A. Bargaz, C. Ghoulam, Industrial Crops and Products, 183 (2022) 114958.
4. S. Nosheen, I. Ajmal, Y. Song, Sustainability, 13 (2021) 1868.
5. Y. Zuo, F. Zhang, Agronomy for Sustainable Development, 29 (2009) 63.
6. E. Bona, G. Lingua, V. Todeschini, In Bioformulations: for sustainable agriculture, N. Arora, S. Mehnaz, R. Balestrini (Eds.), New Delhi, Springer, 2016, 93.

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2023. godina

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