



**AgroSym**  
2022



**BOOK OF  
ABSTRACTS**

*XIII International Scientific Agriculture Symposium  
"AGROSYM 2022"  
October 6-9, 2022*



**AGRO** 2022  
**sym**

# **BOOK OF ABSTRACTS**

**XIII International Scientific Agriculture Symposium  
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**Jahorina, October 06 - 09, 2022**

## Impressum

XIII International Scientific Agriculture Symposium „AGROSYM 2022“

### Book of Abstracts Published by

University of East Sarajevo, Faculty of Agriculture, Republic of Srpska, Bosnia  
University of Belgrade, Faculty of Agriculture, Serbia  
Mediterranean Agronomic Institute of Bari (CIHEAM - IAMB) Italy  
International Society of Environment and Rural Development, Japan  
Balkan Environmental Association (B.EN.A), Greece  
CDR, University of Natural Resources and Life Sciences (BOKU), Austria  
Perm State Agro-Technological University, Russia  
Voronezh State Agricultural University named after Peter The Great, Russia  
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Institute for Animal Science, Ss. Cyril and Methodius University in Skopje, Macedonia  
Serbian Academy of Engineering Sciences, Serbia  
Balkan Scientific Association of Agricultural Economics, Serbia  
Institute of Agricultural Economics, Serbia

#### Editor in Chief

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#### Website:

<http://agrosym.ues.rs.ba>

CIP - Каталогизacija у публикацији  
Народна и универзитетска библиотека  
Републике Српске, Бања Лука

631(048.3)(0.034.4)

INTERNATIONAL Scientific Agricultural Symposium "Agrosym 2022" (13 ; Jahorina)  
Book of Abstracts [Електронски извор] / XIII International Scientific Agriculture  
Symposium "Agrosym 2022", Jahorina, October 06 - 09, 2022 ; [editor in chief Dušan  
Kovačević]. - East Sarajevo =Istočno Sarajevo : Faculty of Agriculture =Poljoprivredni  
fakultet, 2022. - 1 електронски оптички диск (CD-ROM) : текст, слика ; 12 cm

Системски захтеви: Нису наведени. - Насл. са насл. екрана. - Регистар.

ISBN 978-99976-987-2-8

COBISS.RS-ID 136884481

**XIII International Scientific Agricultural  
Symposium “Agrosym 2022”Jahorina, October  
06-09, 2022, Bosnia and Herzegovina**

**BIOACTIVE COMPOUNDS OF SPONTANEOUS HOP AND HOP IN CULTIVARS  
IN THE NORTHEAST OF PORTUGAL**

Briolanja DOS SANTOS, Luís PEDRO, Olívia R. PEREIRA, Hugo GOES, Susana M.  
CARDOSO, Maria João SOUSA ..... 511

# BIOACTIVE COMPOUNDS OF SPONTANEOUS HOP AND HOP IN CULTIVARS IN THE NORTHEAST OF PORTUGAL

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## Abstract

Hop, whose scientific name is *Humulus lupulus* L., is a species of the family Cannabaceae, with climbing, perennial and dioecious characteristics of great importance due to its compounds of interest such as polyphenols and acids. The female inflorescences have glands that secrete mainly lupulin. Hop is known worldwide as an essential raw material and flavoring agent in beer production. Phytochemical compounds from the plant such as xanthohumol, humulone and lupulone have also been used in cosmetics. Moreover, the plant has beneficial properties -anti-inflammatory, antimicrobial, antioxidant. The area of Bragança (Trás-os-Montes) is rich in spontaneous hop and cultivars. The samples of spontaneous hop were collected in different areas of the Bragança district and were analyzed and compared to the varieties of cultivars (Nugget, Polaris, Cascade, Centennial and Chinook). The volatiles extracted from the female cones, in a LikensNickerson system, were analyzed by GC and GC-MS. The  $\alpha$ - and  $\beta$ -acids, from where extracted with calibration standard ICE-3 and analyzed by HPLC. Characterization of  $\alpha$ - and  $\beta$ -acids, and of the phenolic profile of the Hop samples, was also performed by UHPLC-DAD-ESI-MS<sup>n</sup>. The cultivars and their respective spontaneous varieties showed similarities in the monoterpene component, with  $\beta$ -myrcene as the main compound. Regarding HPLC analyses, cultivars showed total values about 15% of  $\alpha$ -acids and about 4% of  $\beta$ -acids, while the spontaneous variety showed 7% of  $\alpha$ -acids and 9% of  $\beta$ -acids, corresponding to the compounds cohumulona, humulone, colupulona, lupulona and xanthohumol. Quercetin and kaempferol glycosides were also present in some extracts as minor compounds.

**Keywords:** *Hop, bioactive compounds, chemistry,  $\alpha$ -acids and  $\beta$ -acids, phenolic compounds.*

## Acknowledgments

Thanks to FCT (Portugal) and the ERDF under the PT2020 Program for financial support to CIMO (UIDB/00690/2020 and CMFPE1; EXPL2021CIMO\_06) and LAQV-REQUIMTE (UIDB/50006/2020).