



INTERNATIONAL CONFERENCE SMART BIO

2ND International Conference

„Smart Bio“

03-05 May 2018

KAUNAS

LITHUANIA

ABSTRACT BOOK

OUR SPONSORS



frazija



VYTAUTO
DIDŽIOJO
UNIVERSITETAS
Botanikos sodas



VYTAUTAS MAGNUS
UNIVERSITY
Faculty of Natural Sciences

Organizers

Chairman: Prof. Dr. **Saulius Mickevičius**, Dean of the Faculty of Natural Sciences, Vytautas Magnus University, Lithuania

Prof. Dr. **Aušra Blinstrubienė**, Dean of the Faculty of Agronomy, Aleksandras Stulginskis University, Lithuania

Assoc. Prof. Dr. **Rolandas Domeika**, Dean of the Faculty of Agricultural Engineering, Aleksandras Stulginskis University, Lithuania

Prof. Dr. **Virgilijus Sruoga**, Dean of the Faculty of Science and Technology, Lithuanian University of Educational Sciences, Lithuania

Dr. **Alvija Šlaševičienė**, Director of Food Institute, Kaunas University of Technology, Lithuania

Yulia Ovchinnikova, Dean of the Faculty of Biology, Vasyl'stus Donetsk National University, Ukraine

Dr. **Nerijus Jurkonis**, Director of Botanical Garden, Vytautas Magnus University, Lithuania

Assoc. Prof. Dr. **Asta Danilevičiūtė**, Vice Dean of the Faculty of Natural Sciences, Vytautas Magnus University, Lithuania

Prof. Dr. **Jana Radzijeuskaja**, Vytautas Magnus University, Lithuania

Assoc. Prof. Dr. **Jūratė Žaltauskaitė**, Vytautas Magnus University, Lithuania

Assoc. Prof. Dr. **Vaida Tubelytė**, Vytautas Magnus University, Lithuania

Dr. **Irma Ražanskė**, Vytautas Magnus University, Lithuania

Dr. **Indrė Lipatova**, Vytautas Magnus University, Lithuania

Deivydas Kiznys, PhD student, Vytautas Magnus University, Lithuania

Kamilė Klepeckienė, PhD student, Vytautas Magnus University, Lithuania

Martynas Klepeckas, PhD student, Vytautas Magnus University, Lithuania

Vesta Matulaitytė, PhD student, Vytautas Magnus University, Lithuania

Tadas Didvalis, PhD student, Vytautas Magnus University, Lithuania

Alona Oberemko, PhD student, Vytautas Magnus University, Lithuania

Marina Sidorenko, PhD student, Vytautas Magnus University, Lithuania

Sonam Chopra, PhD student, Vytautas Magnus University, Lithuania

Dinara Shakeneva, PhD student, Vytautas Magnus University, Lithuania

Diana Navickaitė, PhD student, Vytautas Magnus University, Lithuania

Scientific Committee

Chairman: Prof. Dr. **Algimantas Paulauskas**, Head of Center of Environmental Research, Vytautas Magnus University, Lithuania

Dr. **Gintaras Brazauskas**, Director of Lithuanian Research Centre for Agriculture and Forestry, Lithuania

Prof. Dr. **Jonas Rimantas Stonis**, Lithuanian University of Educational Sciences, Lithuania

Prof. Dr. **Natalija Burbulis**, Aleksandras Stulginskis University, Lithuania

Prof. Dr. **Kęstutis Navickas**, Aleksandras Stulginskis University, Lithuania

Prof. Dr. **Diana Adlienė**, Kaunas University of Technology, Lithuania

Assoc. Prof. Dr. **Vykintas Baublys**, Vice Dean of the Faculty of Natural Sciences, Vytautas Magnus University, Lithuania

Prof. Dr. **Saulius Šatkauskas**, Vytautas Magnus University, Lithuania

Prof. Dr. **Gintautas Saulis**, Vytautas Magnus University, Lithuania

Prof. Dr. **Vida Mildažienė**, Vytautas Magnus University, Lithuania

Prof. Dr. **Eugenija Kupčinskienė**, Vytautas Magnus University, Lithuania

Assoc. Prof. Dr. **Audrius Dėdelė**, Vytautas Magnus University, Lithuania

International Scientific Committee

Prof. Dr. **Artūras Žiemys**, The Houston Methodist Research Institute, USA

Prof. Dr. **Skirmantas Kriaučionis**, University of Oxford, United Kingdom

Prof. Dr. **Michal Stanko**, Institute of Parasitology, Slovak Academy of Sciences, Košice, Slovakia

Prof. Dr. **Isaak Rashal**, Institute of Biology, University of Latvia, Latvia

Prof. Dr. **Iryna Klimkina**, National Mining University, Ukraine

Prof. Dr. **Arnold Gegechkori**, Ivane Jagashvili Tbilisi University, Georgia

Prof. Dr. **Natalja Škute**, Daugpils University, Latvia

Prof. Dr. **Olav Rosef**, Rosef field research station, Norway Assoc. Prof. Dr. **Ghania Phagosian**, Yerevan State University, Armenia

Assoc. Prof. Dr. **Natalia Navumenka**, Belarusian State Pedagogical University named after Maxim Tank, Belarus

Assoc. Prof. Dr. **Oleg Ermishev**, Vasyl'stus Donetsk National University, Ukraine

BIODIVERSITY OF FAMILY LIMONIIDAE (DIPTERA: NEMATOCERA) IN LITHUANIA AND GENUS ANTOCHA. 92 <i>R. Markevičiūtė</i>	
BIODIVERSITY OF FLIES (NEMATOCERA, DIPTERA) IN DEAD WOOD..... 93 <i>I. Gorban, V. Podėnienė</i>	
BIOETHANOL PRODUCTION FROM FIVE CARBON SUGARS 94 <i>Ekin Demiray, Sevgi Ertuğrul Karatay, Gönül Dönmez</i>	
BIOLOGICAL AGE OF TEMPORARILY RELOCATED STUDENTS IN UKRAINE..... 95 <i>Zoryna Boiarska, Oksana Radzikhovska</i>	
BIOLOGICAL TREATMENT OF Cr(VI) FROM WASTEWATERS WITH USING THERMOPHILE MICROALGAL CELLS 96 <i>Elif Safran, Nur Kocerber Kılıc, Gönül Dönmez</i>	
AGING MARKERS IN THE CELLS OF PATIENTS WITH COCAINE SYNDROME. GENERAL AND INDIVIDUAL DIFFERENCIES 97 <i>P.A. Slizhov</i>	
APPLICATION OF LIOPHILIZED CORD BLOOD FOR TREATMENT OF GENITAL HERPES (EXPERIMENTAL STUDY) 98 <i>Viktoria Stetsyshyn, Ludmila Ostankova, Nikolay Bondarovich, Olena Lutsenko, Igor Grisha</i>	
BLUE FLORESCENCE PROTEIN (BFP) TRANSFER IN TO ARABIDOPSIS THALIANA GENOME..... 99 <i>Algirdas Kazlauskas</i>	
CONTENT OF RADIONUCLIDES IN FOREST CULTURES IN VINNYTSK REGION HOUSEHOLDS IN THE DEPENDENCE FROM THE POLLUTION ZONE..... 100 <i>Valentyna Panko, Eduard Kavun, Alexander Hnatyuk, Ratushnyak Vitaliy</i>	
COPPER BIOACCUMULATION STATUS AND PHYTOREMEDIATION POTENTIAL OF SOME AGRICULTURAL PLANT SPECIES GROWING IN POLLUTED AGRICULTURAL LANDS OF ARMENIA 101 <i>Ghazaryan Karen, Ruzan Avetisyan, Hrant Zhamharyan</i>	
DETERMINISTIC APPROXIMATION OF STOCHASTIC SPATIALLY EXPLICIT MODEL OF ACTIN-MYOSIN INTERACTION IN DISCRETE FILAMENT LATTICE: FORMULATION AND APPLICATION TO MODELING OF THE TRANSIENT OSCILLATORY RESPONSE OF MUSCLE 102 <i>G. Taradina</i>	
ECOLOGICAL ASPECTS OF DEVELOPMENT OF FUNERAL BUSINESS IN MEGAPOLIS 103 <i>Volkova Nadezhda, Golovachova Irina</i>	
COPPER PHYTOREMEDIATION POTENTIAL OF NATIVE PLANT SPECIES GROWING IN THE MINE POLLUTED AREAS OF SOUTH ARMENIA 104 <i>K. Ghazaryan, S. Antonyan, H. Movsesyan</i>	
CARBON OF DEAD BIOMASS OF BLACK ALDER FORESTS IN UKRAINIAN POLISSYA 105 <i>A. Bilous, U. Kotlyarevska</i>	
THE INFLUENCE OF THE FEEDING ON DIFFERENT HOST PLANTS ON THE CYTOCHROME P450s ACTIVITY IN THE DAUGHTER STRAINS OF MYZUS PERSICAE 106 <i>R.S. Shulinski, N.V. Voronova, V.A. Atramovich</i>	
NOVEL APPROACH FOR NUMERIC CELL MORPHOLOGY DESCRIPTION AND CLASSIFICATION 107 <i>Yura A. Karetin, Eduardas Cicinskas</i>	

COPPER PHYTOREMEDIATION POTENTIAL OF NATIVE PLANT SPECIES GROWING IN THE MINE POLLUTED AREAS OF SOUTH ARMENIA

K. Ghazaryan¹, S. Antonyan¹, H. Movsesyan¹

¹CHAIR OF ECOLOGY AND NATURE PROTECTION, FACULTY OF BIOLOGY, YEREVAN STATE UNIVERSITY, ALEX MANOOGIAN ST. 1, 0025 YEREVAN, REPUBLIC OF ARMENIA
KGAZARYAN@YSU.AM

Abstract

Nowadays the pollution by heavy metals from mining industry is one of the biggest threats to ecosystems and human health. Objectives of present study were the identification of Cu phytoremediation potential of native wild plant species growing in contaminated soils of mining region and the determination of soil main characteristics affecting Cu accumulation capability of plants. In this study sixteen native wild plant species growing in Cu contaminated soils of mining region in Armenia were investigated to reveal their phytoremediation potential. In roots (dry weight) of dominant plant species growing in Cu contaminated areas the content of copper varied between 55 mg/kg (*Hypericum perforatum*) and 775 mg/kg (*Thymus kotschyanus*), and in shoots of plants - in the range from 33 mg/kg (*Teucrium orientale*) to 243 mg/kg (*Phleum pratense*). Since the Cu accumulation capability of plants depends both on physiological peculiarities of plants and on the content of Cu bioavailable in the soil, the studies were carried out in this direction and it was found that the high contents of humus and clay in the soil facilitated the decrease of the ratio $Cu_{bioavailable}/Cu_{total}$ and as a result - the decrease of Cu accumulation capability of plants. Bioconcentration factor of root (BCF_{root}) and translocation factor (TF) are the important indices for revelation of phytoremediation potential. High BCF_{root} is a significant characteristic of plant species for phytostabilization suitability. The highest BCF_{root} values were registered in *Thymus kotschyanus* (BCF_{root}=4.84), *Phleum pratense* (BCF_{root}=4.64) and *Achillea millefolium* (BCF_{root}=3.94). High TF is a significant characteristic of plant species for phytoextraction suitability, but for phytostabilization suitability a low translocation factor is required. The highest TF values (>1) were observed in *Hypericum perforatum* (TF=1.27) and in *Astrodaucus orientalis* (TF=1.19). This fact indicates that mentioned plants by active mechanisms transfer the copper to their aboveground parts and it can be removed from the soil through harvesting. *Thymus kotschyanus*, *Phleum pratense* and *Achillea millefolium* had the highest phytostabilization potential from all studied plant species due to high BCF_{root} and low TF values registered in these plants, and further field and laboratory experiments are planned to confirm this useful ability for remediation of copper contaminated soils.