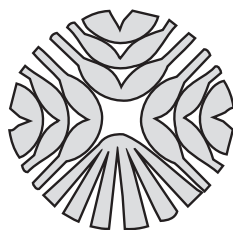


Аграрен университет Agricultural University
Пловдив Plovdiv



АГРАРНИ НАУКИ



AGRICULTURAL SCIENCES

Година VIII Брой 20 Volume VIII Issue 20
Пловдив 2016 Plovdiv 2016

Jubilee Scientific Conference with International Participation
TRADITIONS AND CHALLENGES FACING AGRICULTURAL
EDUCATION, SCIENCE AND BUSINESS
29–31 October 2015, Plovdiv

Under the patronage of the Minister of Agriculture and Food

SECTION HORTICULTURE
SECTION AGRICULTURAL MACHINERY, LAND MELIORATION
SECTION ECONOMICS, MANAGEMENT AND TOURISM
ROUND TABLE *HEALTH OF SOILS – MISSION OF THE FUTURE*

Академично издателство на Аграрния университет
Academic Publishing House of the Agricultural University

Списание *Аграрни науки* е издание на Аграрния университет – Пловдив.
В списанието се публикуват оригинални изследователски статии и обзори
от всички области на растениевъдството, растителната защита, екологията, животновъдството,
икономиката и туризма на български и на английски език.

Agricultural Sciences is a journal of the Agricultural University – Plovdiv.
Original research papers and reviews in all the areas of Crop Science, Plant Protection, Ecology,
Animal Breeding and Husbandry, Economy and Tourism are published in the journal
in Bulgarian and in English.

Редакционна колегия

Гл. редактор – проф. дсн Иванка Лечева
Зам.-гл. редактор – проф. дсн Дияна Светлева
Отговорен редактор – Таня Цветковска

Членове

Чл.-кор. проф. дсн Йорданка Кузманова
Проф. д-н Красимир Иванов
Проф. дсн Венелин Ройчев
Проф. дсн Хари Самалиев
Проф. д-р Борис Янков
Проф. д-р Алекси Алексиев
Проф. д-р Валентин Личев
Доц. д-р Красимир Михов
Доц. д-р Васко Копривленски
Доц. д-р Васко Герзилов
Доц. д-р Иван Брайков

Международна редакционна колегия

Проф. Конрад Хагедорн, дн, доктор хонорис
кауза на АУ – Пловдив
Проф. Жозе Мануел Пейшото Тейшейра Лейтао,
дн, доктор хонорис кауза на АУ – Пловдив
Проф. Джако Вангронсвелд, дн, доктор хонорис
кауза на АУ – Пловдив
Проф. Уили Меерс, дн
Проф. Агниешка Вжохалска, дн
Проф. Нурлан Серекпаев, дн

Списание *Аграрни науки* се реферира пълно в международните бази данни CAB abstracts,
EBSCO Publishing, AGRIS и частично в още 30 други бази данни на CAB International
The *Agricultural Sciences* journal is fully referred to in CAB Abstracts, EBSCO Publishing,
AGRIS and partially – in other 30 databases of CAB International

АГРАРНИ НАУКИ

Гл. редактор – проф. дсн Иванка Лечева
Отговорен редактор – Таня Цветковска
Редактор на Английските резюмета – Ваня Симеонова
Формат – 16/60x84
Печатни коли – 18,1
Академично издателство
на Аграрния университет

Editorial Board

Editor-in-Chief – Prof. Ivanka Lecheva, DSc
Deputy-Editor-in-Chief – Prof. Diyana Svetleva, DSc
Executive Editor – Tania Tsvetkovska

Members

Correspondent member of BAS Prof. Iordanka Koumanova, DSc
Prof. Krassimir Ivanov, DSc
Prof. Venelin Roychev, DSc
Prof. Hari Samaliev, DSc
Prof. Boris Yankov, PhD
Prof. Alexi Alexiev, PhD
Prof. Valentin Lichev, PhD
Assoc. Prof. Krassimir Mihov, PhD
Assoc. Prof. Vasko Koprivlenski, PhD
Assoc. Prof. Vasko Gerzilov, PhD
Assoc. Prof. Ivan Braykov, PhD

International Editorial Board

Prof. Konrad Hagedorn, DSc, Doctor Honoris Causa
of the AU – Plovdiv
Prof. Manuel Peixoto Teixeira Leitão, DSc, Doctor
Honoris Causa of the AU – Plovdiv
Prof. Jaco Vangronsveld, DSc, Doctor Honoris
Causa of the AU – Plovdiv
Prof. Willi Meyers, DSc
Prof. Agnieszka Wrzochalska, DSc
Prof. Nurlan Serekpaev, DSc

AGRICULTURAL SCIENCES

Editor-in-Chief – Prof. Ivanka Lecheva, DSc
Executive Editor – Tania Tsvetkovska
Editor of the English Abstracts – Vania Simeonova
Format – 16/60x84
Quires – 18.1
Academic Publishing House
of the Agricultural University

© Аграрни науки, 2016
ISSN 1313-6577

Аграрен университет – Пловдив, бул. “Менделеев” № 12
www.au-plovdiv.bg E-mail: agriculturalsciences@au-plovdiv.bg

**ORGANIZING COMMITTEE***Prof. DSc Dimitar Grekov*

Rector, Agricultural University – Plovdiv

Prof. Dr. Christina Yancheva

Vice-Rector, Agricultural University – Plovdiv

Prof. DSc Krasimir Ivanov

Vice-Rector, Agricultural University – Plovdiv

Prof. Dr. Neli Bencheva

Vice-Rector, Agricultural University – Plovdiv

Prof. Dr. Yanko Dimitrov

Dean of Faculty of Plant Protection and Agroecology

Prof. Dr. Zhivko Geshev

Dean of Faculty of Economics

Prof. Dr. Nevena Ganusheva

Dean of Center for MSc and PhD students

Assoc. Prof. Dr. Bojin Bojinov

Dean of Faculty of Agronomy

Assoc. Prof. Dr. Krasimir Mihov

Dean of Faculty of Viticulture and Horticulture

Rositsa Hristeva

Chief Accountant of Agricultural University – Plovdiv

Georgi Gergov

Chairman of the Board of Trustees

Borislava Chorbadjieva

Students council, Agricultural University – Plovdiv

INTERNATIONAL SCIENTIFIC COMMITTEE*Prof. Dr. Jaco Vangronsveld – Hasselt University, Belgium**Prof. Dr. William H. Meyers – University of Missouri, USA**Prof. Dr. Michael Sykuta – University of Missouri, USA**Prof. Dr. Agnieszka Wrzochalska – IAFE-NRI, Poland**Prof. Dr. Andrej Kowalski – IAFE-NRI, Poland**Prof. Dr. Piotr Siwek – Agricultural University of Krakow, Poland**Prof. Dr. Michael Boehme – Humboldt University, Berlin**Prof. Nurlan Serekpaev, DSc – Kazakh AgroTechnical University**Prof. Dorota Jadczyk, DSc – West Pomeranian University of Technology, Poland***SCIENTIFIC COMMITTEE OF AGRICULTURAL UNIVERSITY – PLOVDIV**Chair: *Prof. DSc Krasimir Ivanov*Secretary: *Assist. Prof. Dr. Mariana Petkova*Members: *Prof. Dr. Vili Harizanova**Prof. Dr. Andon Vasilev**Prof. Dr. Vasil Nikolov**Prof. Dr. Malgozhata Berova**Prof. Dr. Nikolai Panayotov**Assoc. Prof. Dr. Ivan Penov**Assoc. Prof. Dr. Atanaska Stoeva**Assoc. Prof. Dr. Tonya Georgieva**Assoc. Prof. Dr. Angel Trifonov**Assoc. Prof. Dr. Violeta Dirimanova**Assist. Prof. Dr. Dimka Haitova*