

<i>Maced. J. Anim. Sci.</i>	Vol. <b>13</b> Год.	No. <b>1–2</b> Бр.	pp. <b>1–44</b> стр.	Skopje <b>2024</b> Скопје
-----------------------------	---------------------------	--------------------------	----------------------------	---------------------------------

## MACEDONIAN JOURNAL OF ANIMAL SCIENCE

International Scientific Journal

The *Maced. J. Anim. Sci.* is an international peer-reviewed, open access journal published twice a year. *Maced. J. Anim. Sci.* print ISSN 1857-6907 (on line ISSN 1857-7709) offers free access to all articles at <http://www.mjias.ukim.edu.mk>

Indexed in: CAB Abstracts, Global Health, EBSCO

Published by:

### Institute of Animal Science

Ss. Cyril and Methodius University in Skopje,  
Republic of North Macedonia

Издава:

### Институт за сточарство

Универзитет „Св. Кирил и Методиј“ во Скопје,  
Република Северна Македонија

### EDITORIAL BOARD

Editor in Chief

**Daniela Beličovska,**  
Institute of Animal Science, Skopje,  
Republic of North Macedonia

Главен уредник

**Даниела Беличовска,**  
Институт за сточарство, Скопје,  
Република Северна Македонија

### Editors

### Уредници

**Rodne Nastova**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **Georgi Petkov**, Trakia University, Faculty of Agriculture, Stara Zagora, Bulgaria; **Erbay Bardakcioglu**, Adnan Menderes University, Faculty of Veterinary Medicine, Aydin, Turkey; **Vasil Kostov**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **David Christian de la Fe Rodríguez**, University of Murcia, Spain; **Mirjana Menkovska**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **Oktay Gursoy**, University of Cukurova, Adana, Turkey; **Zvonko Antunović**, University of Osijek, Faculty of Agriculture, Osijek, Croatia; **Bone Palaševski**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **Svetlana Grigorova**, Institute of Animal Science, Kostinbrod, Bulgaria; **Zlata Kralik**, University of Osijek, Faculty of Agriculture, Osijek, Croatia; **Elžbieta Martyniuk**, Warsaw University of Life Sciences, Faculty of Animal Sciences, Warsaw, Poland; **Nedeljka Nikolova**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **Nikola Puvača**, University of Novi Sad, Faculty of Agriculture, Novi Sad, Serbia; **Ángel Gómez Martín**, Departamento de Producción y Sanidad Animal, Salud Pública. Universidad CEU-UCH de Valencia, Spain; **Nikola Pacinovski**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **Theofilos Massouras**, Agricultural University of Athens, Athens, Greece; **Nataša Mateva**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **Ekin Sucu**, Uludag University, Bursa, Turkey; **Magdalena Oblakova**, Agricultural Institute, Stara Zagora, Bulgaria; **Vesna Levkov**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **Miroslav V. Plavšić**, University of Novi Sad, Faculty of Agriculture, Novi Sad, Serbia; **Tošo Kostadinov**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **Zhivko Krastanov**, Agricultural Institute, Stara Zagora, Bulgaria; **Cyril Hrnčar**, Slovak University of Agriculture, Faculty of Agrobiology and Food Resources, Nitra, Slovak Republic; **Elena Eftimova**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia; **Saša Marić**, University of Belgrade, Belgrade, Serbia; **Siniša Berjan**, University of East Sarajevo, Faculty of Agriculture, East Sarajevo, Republic of Srpska; **Snežana Jovanović**, University of Belgrade, Belgrade, Serbia; **Daniela Beličovska**, Ss. Cyril and Methodius University in Skopje, Institute of Animal Science, Skopje, N. Macedonia

### Secretaries

### Секретари

**Suzana Janevska**, Skopje, North Macedonia  
**Ana Palaševska**, Skopje, North Macedonia  
**Irina Ušlinovska**, Skopje, North Macedonia

**Сузана Јаневска**, Скопје, Северна Македонија  
**Ана Палашевска**, Скопје, Северна Македонија  
**Ирина Ушлиновска**, Скопје, Северна Македонија

*Cover*  
**Blagoja Bogatinoski**

*Нацрт на корицата:*  
**Благоја Богатиноски**

*Graphics and art design*  
**Blagoja Bogatinoski**

*Графично и ликовно уредување*  
**Благоја Богатиноски**

*Proof-reader*  
**Alena Georgievska**

*Коректор*  
**Алена Георгиевска**

UDC

Valentina Dojčinovska-Ilioska

National and University Library "St. Kliment Ohridski" – Skopje

УДК

Валентина Дојчиновска-Илиоска

НУБ „Св. Климент Охридски – Скопје

*Address*  
**MACEDONIAN JOURNAL OF ANIMAL SCIENCE**  
(Editorial Board)

*Адреса*  
(Редакција)

**Institute of Animal Science**, Ss. Cyril and Methodius University in Skopje, P.O. Box 207, MK-1001 Skopje, Republic of North Macedonia

**Институт за сточарство**, Универзитет „Св. Кирил и Методиј“ во Скопје, п. фах. 207, МК-1001 Скопје, Република Северна Македонија

E-mail: [mjas@ukim.edu.mk](mailto:mjas@ukim.edu.mk)

Copies: 200

Price: 20 €.

Тираж: 200

Цена: 1200 ден.

Printed in November 2024

Бројот е отпечатен во ноември 2024г