



THE 9TH INTERNATIONAL SCIENTIFIC-TECHNICAL CONFERENCE



**ENVIRONMENTAL ENGINEERING,
PHOTOGRAMMETRY, GEONFORMATICS
Modern Technologies
and Development Perspectives**



17-20 September 2019

LUBLIN, POLAND

PATRONAGE



MINISTER OF SCIENCE
AND HIGHER EDUCATION

JAROSŁAW GOWIN



MINISTRY
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MINISTRY OF AGRICULTURE
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MARSHAL OF THE
LUBELSKIE VOIVODESHIP

JAROSŁAW STAWIARSKI

3RD ANNOUNCEMENT



POLISH NATIONAL AGENCY
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SELECTION OF PAPERS AND PUBLICATION PROCEDURE

Full papers should be submitted to the Scientific Committee first. They will be selected, reviewed and considered by the Committee and Editors-in-Chief to be published in journals given below. Authors will be informed on the selection results. Please send full manuscript directly to the journal chosen from the list below only after receiving confirmation of acceptance from the Conference organizers.

- **Water (IF = 2.524 – in 2018)**

<http://www.mdpi.com/journal/water>

- **Archives of Environmental Protection (IF = 1.689 – in 2018)**

<http://ipis.pan.pl/en/nauka-2/archives-of-environmental-protection>

- **Journal of Ecological Engineering**

<http://www.jeeng.net>

- **Acta Scientiarum Polonorum - Formatio Circumiectus**

<http://www.formatiocircumiectus.actapol.net/pl/>

- **Journal of Water and Land Development**

http://www.itp.edu.pl/wydawnictwo/journal/index_en.php

- **Geomatics, Landmanagement and Landscape**

<https://gll.urk.edu.pl>

- **Geodynamics**

<http://science.lpnu.ua/jgd>

- **Geodesy, Cartography and Aerial Photography**

<http://science.lpnu.ua/istcgcap>

- **E3S Web of Conferences, Open Access proceedings in Environment, Energy and Earth Sciences**

<https://www.e3s-conferences.org/index.php>

All papers must report original, previously unpublished scientific and technical findings in the scopes of the conference.

All papers should contain the following acknowledgement: Publication is funded by the Polish National Agency for Academic Exchange under the International Academic Partnerships Programme from the project „Organization of the 9th International Scientific and Technical Conference entitled Environmental Engineering, Photogrammetry, Geoinformatics – Modern Technologies and Development Perspectives”.

IMPORTANT DATE

DEADLINE FOR FULL MANUSCRIPT SUBMISSION

30TH NOVEMBER, 2019



POLISH NATIONAL AGENCY
FOR ACADEMIC EXCHANGE

CONFERENCE PROGRAMME

17th September, 2019 – Tuesday

14.00 – 20.00	Accommodation	Victoria Hotel, 58/60 Narutowicza St., Lublin
17.00 – 20.00	Welcome reception	

18th September, 2019 – Wednesday

08.00 – 09.00	Registration – Hall at the Congress Centre University of Life Sciences in Lublin, 15 Akademicka St.	
09.00 – 10.00	Conference opening – Congress Centre	
10.00 – 11.30	1ST PLENARY SESSION – ENVIRONMENTAL ENGINEERING	
10.00 – 10.20	Joan Garcia – Constructed wetlands: a state of the art technology for wastewater treatment	
10.20 – 10.40	Hans-Joachim Nägele – Renewable energy sources in Europe - new trends and technologies in biogas production and utilization	
10.40 – 11.00	Magdalena Gajewska – The importance and challenges for nature based solution in the circular economy	
11.00 – 11.20	Czesława Rosik-Dulewska, Tomasz Ciesielczuk – The management of organic waste in the closed cycle of rescue for Polish soils	
11.30 – 12.30	Poster session and coffee break – Hall at the Congress Centre	
12.30 – 14.00	2ND PLENARY SESSION – PHOTOGRAMMETRY AND GEOINFORMATICS	
12.30 – 12.50	Yurii Karpinskyi, Nadiia Lazorenko-Hevel – Topographic mapping in National Spatial Data Infrastructure in Ukraine	
12.50 – 13.10	Livia Nistor-Lopatenco – WEB GIS solution for urban planning documentation workflow	
13.10 – 13.30	Dietrich Schröder – Open Geodata - Chances and Challenges	
13.30 – 13.50	Wiesław Kosek – Causes of changes in the terrestrial climate	
14.00 – 15.00	Lunch	
15.30 – 17.45	PARALLEL SESSIONS (PART 1) University of Life Sciences in Lublin, 28 Głęboka St.	
	I – ENVIRONMENTAL ENGINEERING	II – PHOTOGRAMMETRY AND GEOINFORMATICS
15.30 – 15.45	Carlos Ribeiro, Anabela Durão, Fátima Carvalho, Adelaide Almeida – The effect of increasing ammonium nitrogen load in the vegetal biomass and the removal efficiencies on VFCW	Ryszard Żróbek – Some problems of the management of state and public sector land
15.45 – 16.00	Shubiao Wu – Impact of engineered nanoparticles on microbial transformations of carbon, nitrogen, and phosphorus in wastewater treatment processes	Kazimierz Bęcek, Patrycja Pochwatka, Volkan Akgul – Evaluation of vertical accuracy of the TanDEM-X using runway method



16.00 – 16.15	Ewa Felis – Removal of selected micropollutant from aquatic environment by means of solar light driven processes	Katarzyna Bobkowska, Pawel Burdziakowski, Adam Ingot, Dominika Kalinowska, Marek Przyborski, Pawel Wielgat, Piotr Zima – Machine learning tools for the segmentation of the images of shallow water reservoirs
16.15 – 16.30	Adelaide Almeida, Pedro Correia, Mikkaela Santinii, Anabela Durão, Fátima Carvalho, Humberto Chaves, Carlos Ribeiro – Boron removal from wastewater in a vertical flow constructed wetlands	Lyubov Babiy, Ihor Kolb, Lubomyr Dychko – Method of collection of control points for georeferencing of aerial and space images
16.30 – 16.45	Anabela Durão, Albertina Raposo, Gabriela Palma, Elsa Rodrigues, Adelaide Almeida, João Trindade – Initiatives to reduce water consumption on a school building: a case study of School of Technology and Management - IPBeja	Agnieszka Bitner – The cartographic method of determining urbanization level on the Earth's surface
16.45 – 17.00	Wei Qiao – Enhanced methanogenic performance and metabolic pathway of high solid anaerobic digestion of chicken manure by trace elements supplementation	Athanasios Koukoffikis, Volker Coors – Visual Analytics platform for detecting wind energy potential in an urban environment
17.00 – 17.15	Jacek Dach, Andrzej Lewicki, Jakub Mazurkiewicz, Alina Kowalczyk-Juśko – Biowaste to bioenergy: innovative Polish biogas technologies	Vasile Chiriac, Vladimir Ciclicci – Calibration of Automated Verticality Monitoring System of radio-communication masts/towers using geodetic measurements
17.15 – 17.30	Svitlana Kokhan – Using vegetative indices to quantify agricultural crop characteristics	Volodymyr Hlotov, Khrystyna Marusazh – Accuracy investigation of create points cloud with Faro Focus 3D S120 Terrestrial Laser Scanner
17.30 – 17.45	Discussion	Discussion
20.00	Gala dinner – Victoria Hotel, Narutowicza St. 58/60, Lublin	
19th September, 2019 – Thursday		
9.00 – 11.15	PARALLEL SESSIONS (PART 2) Victoria Hotel, 58/60 Narutowicza St., Lublin	
	I – ENVIRONMENTAL ENGINEERING	II – PHOTOGRAMMETRY AND GEOINFORMATICS
9.00 – 9.15	Patrícia Palma, Sofia Fialho, Ana Lima, Maria Helena Novais, Luis Monllor-Alcaraz, Nuria Guillem-Argiles, Miren Lopez de Alda, Paula Alvarenga – Risk assessment of pharmaceuticals at tributaries of Alqueva Reservoir (southern of Portugal)	Khrystyna Burshtynska, Yuliia Denys, Bohdan Polishchuk – Monitoring of coniferous forest drying in Precarpathian region using remote sensing data

9.15 – 9.30	Midona Dapkienė, Algirdas Radzevicius, Laima Česonienė, Daiva Šileikienė – Innovative wastewater treatment technologies for rural areas of Lithuania	Volodymyr Shevchuk, Iryna Korolik, Tetiana Romanyshyn – Monitoring of the planned displacements and landscape changes of the riverine area of the part of Dniester River
9.30 – 9.45	Laima Česonienė, Daiva Šileikienė, Midona Dapkienė – Assessment of the relationship between the values of the water quality elements of the water bodies and the hydrometric parameters	Boris Chetverikov, Lyubov Babiy, Mykhailo Protsyk, Taras Ilkiv – Error estimation of orthotransformation of aerial images obtained from UAVs on the mountainous local site in the village Shidnytsya
9.45 – 10.00	Adelaide Almeida, Carlos Ribeiro, Humberto Chaves – Caffeine removal efficiency in a vertical flow constructed wetland	Wiesław Kosek, Justyna Gabryszuk – Comparison of amplitude variations in length of day and other geophysical time series
10.00 – 10.15	Adam Sochacki – The interactions of organic xenobiotics with manganese oxides in transition zones	Katarzyna Glińska-Lewczuk, Paweł Burandt, Magdalena Mleczko, Marek Mróz – Changes in integration of hydrographic network in the middle Biebrza floodplain based on joint hydrological and remote sensing observations
10.15 – 10.30	Maria Teresa Borralho, Adelaide Almeida, Carlos Marques, Izabel Parente, Anabela Durão – Evaluation of the impact of the connection of Alqueva reservoir in the quality of irrigation water at Roxo sub-basin of Sado river catchment	Luís Carlos Bruno, Elsa Rodrigues – A web system to engage people in reducing the environmental footprint of a school
10.30 – 10.45	Agnieszka Karczmarczyk, Anna Baryła, Joanna Fronczyk, Agnieszka Bus, Józef Mosiej – Pollutants leaching from aggregates commonly used in green roofs substrates	Grzegorz Grzywaczewski, Ignacy Kitowski – Application of GIS methods to Aquatic Warbler <i>Acrocephalus paludicola</i> conservation
10.45 – 11.00	Lothar Paul, Tilo Hegewald, Kathrin Jäschke – Management of drinking water reservoirs under climate change	Ignacy Kitowski, Grzegorz Grzywaczewski – Application of GIS methods to birdstrike management at the military airfield
11.00 – 11.15	Discussion	Discussion
11.15 – 11.45	Coffee break	
11.45 – 14.00	PARALLEL SESSIONS (PART 3) Victoria Hotel, 58/60 Narutowicza St., Lublin	
	I – ENVIRONMENTAL ENGINEERING	II – PHOTOGRAMMETRY AND GEOINFORMATICS
11.45 – 12.00	Huabao Zheng, Shuangyan Xu, Tao Zhang, Yunlong He – Improving furfural tolerance of recombinant <i>E. coli</i> in the fermentation of lignocellulosic sugars into ethanol	Volodymyr Hlotov, Alla Hunina – Study of the method for determination of digital camera focal length

12.00 – 12.15	Wolfgang Merkle, Andreas Lemmer, Hans Oechsner – Two-stage high pressure anaerobic digestion	Vasile Grama, Andrei Jacovlev – Assessment of environmental conditions within the limit of the riparian water protection strips using the WebGIS technology
12.15 – 12.30	Yanjiang Cai, Ziyin Du – Effects of livestock excreta deposition on nitrogen losses from grazed grassland ecosystems and a preliminary field study in Tibet, China	Livia Nistor-Lopatenco, Angela Mnogodetnai, Alexandru Pantaz – Ensuring the maintenance of the Automated Informational System "State Animal Register" in the Republic of Moldova
12.30 – 12.45	Wojciech Czekala, Marta Ciešlik, Damian Janczak, Jakub Mazurkiewicz, Jakub Pulka – Food waste management using <i>Hermetia illucens</i> insect	Ryszard Tukaj – Testing the possibility of taking measurements on oblique images
12.45 – 13.00	Andrzej Lewicki, Wojciech Czekala, Aleksandra Jeżowska, Katarzyna Gajewska, Jakub Mazurkiewicz, Jacek Dach – The impact of biogas plants on environmentally- friendly chicken manure management	Matthias Fitzky, Rosanny Sihombing, Sabo Kwada Sini – Developing web based 3D health-aware routing for pedestrians and cyclists
13.00 – 13.15	Elżbieta Jarosz-Krzemińska, Joanna Poluszyńska – Assessing the potential use of fly ash from biomass combustion in fluidized bed boilers for agricultural and reclamation purposes	Franz-Josef Behr – The commons, the open source approach and the geospatial arena
13.15 – 13.30	Jasper Mbah, Joanna Chmist, Krzysztof Szoszkiewicz – The effects of inflow of agricultural waste water on bivalves behavior	Joseph Gitahi, Andrés Felipe Ramírez, Michael Hahn – High-resolution urban aerosol monitoring using Sentinel-2 satellite images
13.30 – 13.45	Annet Pouw, Floris Keizer, Anabela Durão, Rita Azedo, Ana Ilhéu, Fátima Carvalho – International project on aquatic ecosystems: controlling invasive species at ALQUEVA PROJECT - different infra structures same approach?	Elsa Rodrigues, Luís Carlos Bruno – The game to promote the capability of reducing, reuse and recycling the waste
13.45 – 14.00	Discussion	Discussion
14.00 – 15.00	Lunch	
15.15 – 18.00	City of Lublin Tour	
19.00	Dinner	

20th September, 2019 – Friday

20th September, 2019 – Friday		
9.00 – 10.45	PARALLEL SESSIONS (PART 4) Victoria Hotel, 58/60 Narutowicza St., Lublin	
	I – ENVIRONMENTAL ENGINEERING	II – PHOTOGRAMMETRY AND GEOINFORMATICS
9.00 – 9.15	Joanna Rodziewicz, Artur Mielcarek, Wojciech Janczukowicz, Kamil Bryszewski – The influence of electric current density on specific rate of denitrification and the rate of nitrogen removal in electrochemical and electrobiological rotating contactors	Barbara Sowińska-Świerkosz, Malwina Michalik-Śnieżek – Landscape indicators based on remote-sensing data as a tool of monitoring environmental values of areas of different level of anthropogenic transformation
9.15 – 9.30	Krzysztof Szoszkiewicz – Hydromorphological monitoring of flowing waters in Poland - a new method based on the hydromorphologic index for river using GIS tools	Katarzyna Pawęska, Paweł B. Dąbek – Evaluation of biomass growth in the natural wastewater treatment plant irrigated with domestic wastewater using ALS LiDAR data and GIS technique
9.30 – 9.45	Sonja Bauer – Opportunities for rural areas in water scarce regions by reusing industrial and municipal wastewater	Jarosław Janus, Piotr Bożek – New approach to land fragmentation evaluation with the use of GIS tools
9.45 – 10.00	Kamila Rybczyńska-Tkaczyk, Teresa Kornilłowicz-Kowalska – Biodecolorization of anthraquinone dyes using immobilised mycelium of <i>Bjerkandera adusta</i> CCBAS 930	Żanna Stręk, Karol Noga – Production value of agricultural land - a factor determining the consolidation of land - case study
10.00 – 10.15	Ana Pardal, Telma Romeira, Anabela Durão – Eco Green Campus: challenges and opportunities. The study case of Polytechnic Institute of Beja	Khrystyna Burshtynska, Andriy Babushka, Maksym Halochkin – Hydrological processes modeling using GIS
10.15 – 10.30	Tânia Correia, Adelaide Almeida, Mariana Regato, Fátima Carvalho – Urban wastewater chemical precipitation treatment by hand with hydroponic reuse	Kamil Nieścioruk, Małgorzata Sosik – Environmental education in protected areas. Spatio-thematic analysis of Kazimierz Landscape Park
10.30 – 10.45	Discussion	Discussion
10.45 – 11.30	PRESENTATION OF SPONSORS	
11.30 – 12.00	Coffee break	
12.00 – 13.00	Transfer to Kazimierz Dolny	
13.00 – 14.00	Dinner and closing ceremony of the conference in Kazimierz Dolny	
14.00 – 17.00	Kazimierz Dolny Tour	
about 18.00	Return to Lublin	



**POLISH NATIONAL AGENCY
FOR ACADEMIC EXCHANGE**

POSTER SESSION

1. **Mariusz Adamski, Jakub Mazurkiewicz, Alina Kowalczyk-Juśko.** ENERGETIC TREATMENT OF CATERING WASTE IN THE PROCESS OF ANAEROBIC STABILIZATION OF MULTICOMPONENT MIXTURES WITH BIOGAS EXTRACTION
2. **Dina Apostol, Arina Cepoi.** CADASTRAL WORKS PERFECTED IN THE NEW INFORMATION SYSTEM MOLDLIS FROM REPUBLIC OF MOLDOVA. PERSPECTIVES
3. **Lyubov Babiy, Taras Ovramenko, Olha Koval.** DESIGN AND ANALYSIS OF THE FEATURES OF A TOURIST HIKING TRAIL ON THE TERRITORY OF THE GORGAN MOUNTAIN RANGE
4. **Aleksandra Bawiec, Katarzyna Pawęska, Krzysztof Pulikowski.** CHANGES IN PARTICLE SIZE DISTRIBUTION IN HYDROPONIC LAGOONS WORKING AS A THIRD STAGE OF WASTEWATER TREATMENT
5. **Agnieszka Bitner, Robert Zygmunt, Mateusz Furczoń.** QUANTITATIVE CARTOGRAPHIC METHODS IN REAL ESTATE MARKET ANALYSIS
6. **Agnieszka Bitner, Stanisław Baciór, Jarosław Taszakowski, Karol Król, Paweł Basta.** A DISTINCTIVE SHAPE OF CADASTRAL PLOTS BORDERING THE RIVER MŁYŃÓWKA IN STRZELCE WIELKIE
7. **Monika Bogusz, Krzysztof Józwiakowski, Michał Marzec Arkadiusz Malik.** THE STATE AND NEEDS OF THE DEVELOPMENT OF WATER SUPPLY AND SEWERAGE INFRASTRUCTURE IN THE RADZYŃ DISTRICT
8. **Justyna Bohacz, Teresa Kornilłowicz-Kowalska, Michał Możejko.** REMOVAL OF TEXTILE DYE (RBBR) FROM WATER ENVIRONMENT BY FUNGI FROM LIGNINOCELLULOSIC COMPOSTS
9. **Gabriel Borowski, Małgorzata Pawłowska, Tomasz Oniszczyk, Tomasz Klepka.** EFFECT OF THE FLAX FIBERS ON THE MECHANICAL AND BIODEGRADABILITY PROPERTIES OF BIOCOMPOSITES BASED ON PLASTICIZED STARCH
10. **Teresa Borralho, David Gago, Adelaide Almeida.** STUDY OF THE APPLICATION OF FLOATING BEDS OF MACROPHITES (*VETIVERIA ZIZANOIDES* AND *PHRAGMITES AUSTRALIS*) IN PILOT SCALE FOR THE REMOVAL OF HEAVY METALS OF THE ÁGUA FORTE STREAM AT ALENTEJO REGION (PORTUGAL)
11. **Natalia Brodowska, Mateusz Wójcik, Krzysztof Józwiakowski, Agnieszka Listosz, Agnieszka Micek.** THE INFLUENCE OF SALT USED FOR ROADS DE-ICING ON CHLORIDES AND SULPHATES CONCENTRATION IN THE BYSTRZYCA RIVER ON THE AREA OF LUBLIN CITY
12. **Kamil Łukasz Bryszewski, Artur Mielcarek, Joanna Rodziewicz, Wojciech Janczukowicz.** EFFECTIVENESS OF CONTAMINANTS REMOVAL IN THE SUMMER AND WINTER SEASON IN A SMALL SEWAGE TREATMENT PLANT OPERATING BASED ON THE TRICKLING BIOFILTERS TECHNOLOGY
13. **Piotr Bugajski, Jan Pawelek.** CONCENTRATIONS OF ORGANIC AND BIOGENIC POLLUTANTS IN WASTEWATER AFTER MECHANICAL TREATMENT IN THE ASPECT OF BIOLOGICAL REACTOR DESIGN
14. **Piotr Bugajski, Jan Pawelek, Andrzej Wałęga, Karolina Kurek, Agnieszka Operacz, Dariusz Młyński.** OPTIMIZATION OF THE PERCENTAGE OF SEWAGE FROM SEPTIC TANKS FOR STABLE OPERATION OF A WASTEWATER TREATMENT PLANT
15. **Paweł Burandt, Katarzyna Glińska-Lewczuk.** INFLUENCE OF SURFACE WATERS ON BIODIVERSITY OF FOREST HABITATS



16. **Paweł Burandt, Katarzyna Glińska-Lewczuk.** IMPACT OF RESTORATION OF RAISED BOGS ON THE QUALITY OF PINE STANDS
17. **Arlinda Cakaj, Klaudia Borowiak, Marta Lisiak, Mirosław Mleczek, Przemysław Niedzielski, Krzysztof Szoszkiewicz.** RARE EARTH ELEMENTS ACCUMULATION IN *TARAXACUM OFFICINALE* COLLECTED IN URBAN AREAS OF PRISTINA (KOSOVO) AND POZNAN (POLAND)
18. **Joanna Chmist, Arkadiusz Wencka, Martyna Szczepaniak, Joanna Szymczak, Maciej Kujawski, Krzysztof Szoszkiewicz.** EFFECTS OF IBUPROFEN AND VENLAFAXINE ON BEHAVIOURAL PARAMETERS IN FRESHWATER BIVALVE *UNIO TUMIDUS*
19. **Tomasz Ciesielczuk, Czesława Rosik-Dulewska, Joanna Poluszyńska, Edyta Lachowska.** THE POSSIBILITIES OF USING THE FIBROUS NATURAL MATERIALS AS ABSORBENTS FOR REMOVING ALIPHATIC HYDROCARBONS (C7-C15) FROM AN AQUEOUS SOLUTION
20. **Ireneusz Cymes.** INFLUENCE OF MORPHOMETRIC PARAMETERS OF MIDFIELD RESERVOIRS ON BIOACCUMULATION OF HEAVY METALS BY *TYPHA LATIFOLIA*
21. **Ireneusz Cymes.** THE USE OF THE CCME-WQI INDEX TO ASSESS THE POSSIBILITY OF USING WATER RETAINED IN MIDFIELD WATER RESERVOIRS
22. **Ireneusz Cymes, Izabela Ryniec.** POSSIBILITY OF USING MACROFITS AS BIOINDICATOR HEAVY METALS DEPOSITED IN THE BOTTOM SEDIMENTS
23. **Mirosław Czechłowski, Damian Marcinkowski, Weronika Gracz, Wojciech Golimowski, Andrzej Lewicki.** EFFECT OF DIESEL FUEL TEMPERATURE ON THE NITROGEN OXIDES EMISSION FROM A COMPRESSION-IGNITION ENGINE
24. **Bohdana Dorozhynska, Olena Dorozhynska, Iryna Dychko.** APPLICATION OF AERIAL IMAGES TO PROVIDE SANITARY PROTECTION OF MINERAL WATER SPRINGS
25. **Oleksandr Dorozhynskyy, Bogdan Balylo, Orest Dorozhynskyy, Victor Dychko.** METHODOLOGY OF GEOINFORMATION DESIGN OF TRANSPORTATION ROUTES
26. **Orest Dorozhynskyy, Oleksandr Dorozhynskyy.** SPATIAL MODELLING OF PEATLAND AREA BY MEANS OF DIGITAL PHOTOGRAMMETRY
27. **Ewa Dragańska, Ireneusz Cymes.** FUTURE CLIMATE IN POLAND ON THE BASE OF SELECTED CLIMATE CHANGE SCENARIOS
28. **Ewa Dragańska, Katarzyna Glińska-Lewczuk.** CLIMATE OF NORTH-EASTERN POLAND IN LIGHT OF A SELECTED CLIMATE CHANGE SCENARIO
29. **Anabela Durão, Cátia Rocha, Isabel Parente, Teresa Carvalhos, Adelaide Almeida.** FLOATING BEDS: PILOT SCALE TO TREAT SURFACE WATER WITH ACID CHARACTERISTICS
30. **Lyubomyr Dychko, Olha Balan.** INTEGRATED APPROACH TO INVENTORY OF LAND AND OBJECTS OF RAILWAY TRANSPORT BY REMOTE SENSING METHOD
31. **Iryna Dychko, Olena Dorozhynska, Oleksandr Dorozhynskyy, Viktoriya Panchuk.** THE STUDY OF RECREATIONAL AREAS USING REMOTE SENSING DATA
32. **Victor Dychko, Oleksandr Dorozhynskyy.** MATHEMATICAL MODEL OF A PRIORI ESTIMATION OF UAV – PHOTOTRIANGULATION
33. **Likui Feng, Haiming Wu.** CAN BIOCHAR APPLICATION IMPROVE NITROGEN REMOVAL IN CONSTRUCTED WETLANDS FOR TREATING AEROBICALLY-DIGESTED SWINE WASTEWATER?
34. **Monika Fornal, Marija Oštarić, Niccolò Sala, Annet Pouw, Fátima Carvalho, Anabela Durão.** PREVENTION AND CONTROL STRATEGIES FOR WATER HYACINTH (*EICHHORNIA CRASSIPES*) IN PISÃO RESERVOIR
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