



TOXICROP NEWSLETTER 4

January 2023

CYANOTOXINS IN IRRIGATION WATERS: Surveillance, Risk Assessment, and Innovative Remediation Proposals

TOXICROP aims: to cover knowledge gaps and concerns raised related with the use of raw waters contaminated with cyanobacteria and cyanotoxins in crop irrigation. Research and innovation activities will be developed to (a) assess the risk of use of eutrophic waters in agriculture; (b) development of low-cost technologies of water treatment and (c) improve the detection and quantification of cyanotoxins in water, soil and plant materials

TOXICROP || Events

ORGANISED

TOXICROP conference

17th International Conference on Wetland Systems for Water Pollution Control

Location: Lyon, France

Date: 06-10/11/2022

Organizer: INRAE

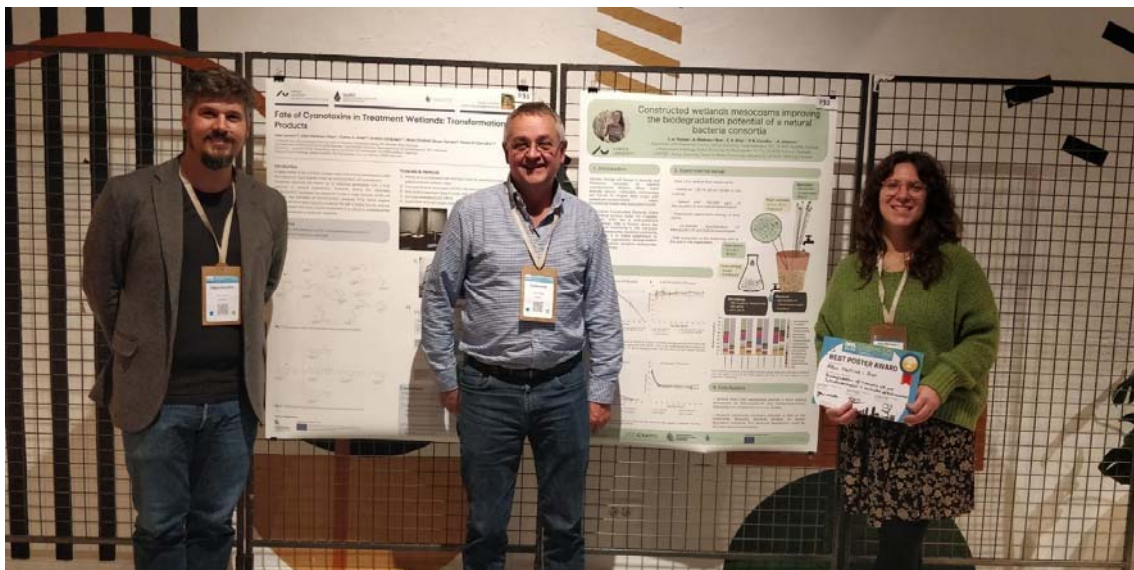
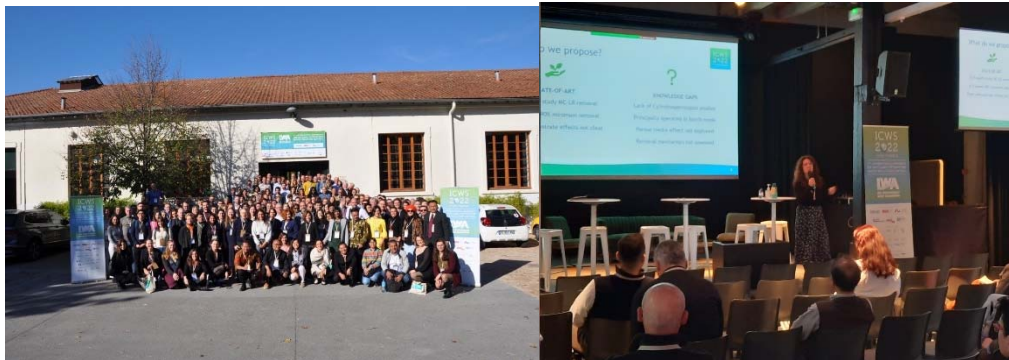
TOXICROP was presented at the 17th international conference on Wetland Systems for Water Pollution Control (ICWS2022), held from 6 – 10 November 2022 in Lyon, France. The conference had 234 participants from 43 different countries to present and discuss the developments in the field of treatment wetlands and nature-based solutions. The conference was held over four days, with three days of keynote presentations and parallel sessions of oral presentations, and one day of technical visits. Over 130 oral presentations and 40 poster presentations. The team from Aarhus University had 1 oral talk and 2 posters related with TOXICROP. Alba Martinez i Quer talked about constructed wetlands for the remediation of

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cyanotoxins: microbes, transformation products and operational design. The two posters Biodegradation of Microcystin-LR and Cylindrospermopsin in constructed wetland mesocosms and Fate of Cyanotoxins in Treatment Wetlands: Transformation Products, presented the work from the MSc students Lasse A. Thyssen and Yrsa Larsson, respectively. Alba Martinez was awarded one the three best poster presentations of the conference. Marisa Almeida from CIIMAR was also present at the conference and there was a great chance to discuss the latest developments in TOXICROP WP6. The electronic conference proceedings are free for download at the conference website (www.icws2022.insight-outside.fr).



TOXICROP workshop

Preparación de las muestras de campo para análisis de cianotoxinas

Location: Arequipa, Peru

Date: 31 - 02/11/2022

Organizer: UNSA

Alexandre Campos, on his visit to University Nacional de San Agustín the Arequipa (UNSA), Peru, on October 2022, co-organized with the colleagues from UNSA, professor Cesar Ranilla, and CIENPR, Victor Uro, a workshop dedicated to the sample preparation for cyanotoxins

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analysis. The workshop involved theoretical and practical lectures held in a mixed format (online and in person). In total 8 university students, professors and researchers attended the workshop which included hands-on training and processing of water samples from different water sources from the region of Arequipa.



TOXICROP seminar

Study of the performance of Multi-Soil-Layering (MSL) ecotechnology for removal of cyanobacteria and cyanotoxins from freshwaters

Date: 14/10/2022

Venue: CIIMAR

The PhD student Roseline Prisca, from the University Cad Ayyad, Morocco, visited CIIMAR during July, August and September 2022 to develop part of her research work devoted to the use of the eco-technology MSL to clean water contaminated with toxic cyanobacteria and cyanotoxins. During the stay at CIIMAR the student provided a seminar at CIIMAR, where the student explained the objectives of the PhD project and the results obtained so far including results gathered from the work carried out in CIIMAR. At CIIMAR, Roseline Prisca analyzed water samples contaminated with microcystins and performed gene expression studies to identify the presence of microcystins degrading bacteria in MSL sediments.



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Toxic CyanoHAB events and Health risk assessment in microcystins contaminated vegetal crops

Date: 06/12/2022

Venue: CIIMAR

Professor Brahim Oudra, from the Faculty of Sciences Semlalia, University Cad Ayyad, Morocco, visited CIIMAR in the framework of the TOXICROP project during November-December 2022. During his stay at CIIMAR provided a seminar to CIIMAR staff focused on the latest research developed by his research group. Professor Brahim Oudra shared with CIIMAR community results from the studies carried out in Morocco on cyanotoxins and cyanobacteria occurrence and monitoring, contamination of irrigation waters and impacts of cyanotoxins in plant development.



Algal biotechnology in Colombia

Date: 11/01/2023

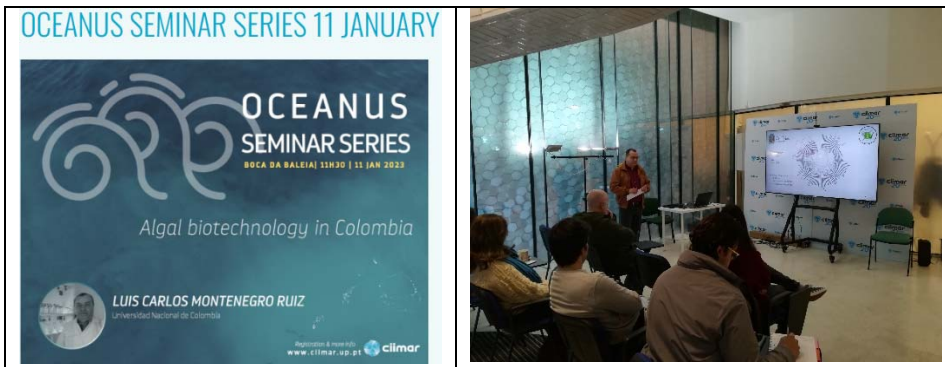
Venue: CIIMAR

Professor Luis Montenegro from the University Nacional de Colombia (UNAL), visited CIIMAR in the months of December 2022 and January 2023 to pursue training in molecular and analytical techniques for the analysis of cyanotoxins. The visit to CIIMAR enabled to strengthen synergies between the Institutions and the research teams from UNAL and CIIMAR and the compromise of a co-supervision of a PhD research project. During the stay at CIIMAR Professor Luis Montenegro provided a pleasant talk about the research work developed by his research group at UNAL. Professor spoke about the latest developments in the biotechnological applications of microalgae and cyanobacteria in Colombia, as for production of bioactive compounds, food supplements, environmental monitoring and toxicology.

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TOXICROP || Scientific Missions

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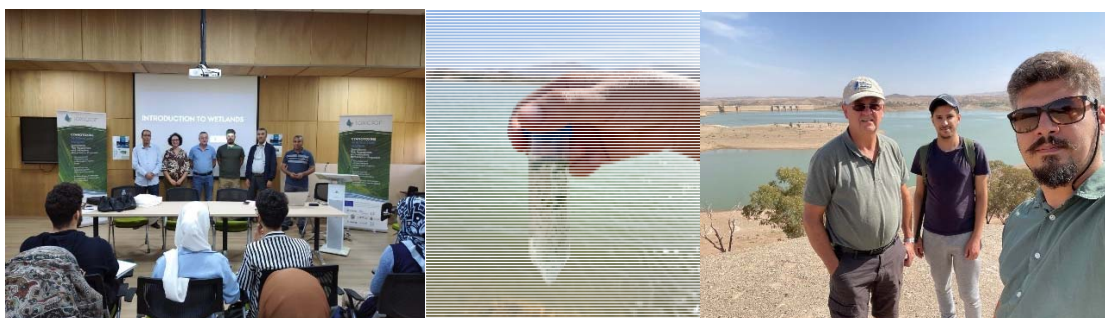
Marrakech - Morocco

Location: Marrakech, Morocco

Venue: Cadi Ayyad University

Date: October 2022

In October 2022, researchers Pedro Carvalho and Carlos Arias from Aarhus University, Denmark have visited their TOXICROP partners at Cadi Ayyad University in Marrakech, Morocco. The visit organized by Brahim Oudra and Laila Mandi included the facilities, laboratories and pilots from the National Centre for Studies and Research on Water and Energy, and the Faculty of Sciences Semlalia, a field trip to the case study site - lake of Lalla Takerkoust and 2 full-scale Multi-soil-layer systems. The team from Denmark delivered a few lectures to the local students in the Professional bachelor degree of Sciences and Technologies of Liquid and Solid Waste Sanitation and the master's degree in Biodiversity, Climate Change and Sustainable Development. Moreover, a few days were dedicated to exchange knowledge and experiences on TOXICROP activities in WP4 dealing with uptake of toxins by food crops, as well as phytotoxic effects, and WP6 dealing with the use of MSL systems for the treatment of cyanotoxins.



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TOXICROP || Publications

Latest Publications

Casas-Rodríguez A, Cameán AM, Jos A, 2022. Potential Endocrine Disruption of Cyanobacterial Toxins, Microcystins and Cylindrospermopsin: A Review. *Toxins* 14, 882. <https://doi.org/10.3390/toxins14120882>

TOXICROP || Upcoming Events



The 20th ICHA in Hiroshima, Japan, in November 2023, would provide an excellent opportunity to make contributions to the HAB knowledge from all over the world. The theme of the conference will be “HAB Science and Human Well-being”. The goal is to exchange relevant scientific information towards a greater understanding of HAB mechanisms, better and timely predictions of HAB occurrences and mitigating their negative impacts.



SETAC EUROPE 33RD ANNUAL MEETING
30 APRIL - 4 MAY 2023 | DUBLIN, IRELAND + ONLINE

SETAC is a not-for-profit, worldwide professional organization composed of about 5,000 individuals and institution in more than 90 countries dedicated to the study, analysis and solution of environmental problems, the management and regulation of natural resources, research and development and environmental education. In addition, the society has more than 20,000 followers worldwide.



Aarhus University, is organizing the bi-annual (PhD) Summer Course on Treatment Wetlands for Water Pollution Control. The dates are set for 18 to 24 June 2023 at the Marine Biological Station Rønbjerg, located at the Rønbjerg Harbour, Denmark.

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The aim of the course is to provide participants with

- (i) an overview of different types of constructed wetland systems, their applicability and limitations
- (ii) a thorough understanding of the processes of importance for the transformation and removal of nutrients and various pollutants in wetlands,
- (iii) the capability to prepare draft designs of treatment wetland systems for specific application, using the latest design tools
- (iv) an overview of current research needs, methodologies and technology development options.

The target group for the course is young researchers and PhD-students with projects related to processes in aquatic and wetland environments, addressing environmental issues and ecological engineering options. The course can provide 5 ECTS (European Credit Transfer System)

For more information, please contact the head of the course:

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