



People's Democratic Republic of Algeria
Ministry Of Higher Education And Scientific Research
Ghardaia University
Faculty Of Natural And Life Sciences and Earth Sciences
Biology Department
In Collaboration With
Valorization and Conservation of Arid Ecosystems
Laboratory. "VCAEL"



INTERNATIONAL CONGRESS ON THE VALORIZATION & CONSERVATION OF ARID ECOSYSTEMS (ICVCAE 2025)

Chair of congress : Dr. Amel HEROUINI

Proceedings (ICVCAE 2025)

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- The specific objectives of the conference.

- To strengthen scientific research and international cooperation between universities, research laboratories, institutions, and stakeholders working on arid and semi-arid environments.
- To analyze the current state of arid ecosystems and assess the impacts of climate change, environmental degradation, and overexploitation of natural resources.
- To highlight the ecological and economic potential of arid regions and explore innovative and sustainable strategies for the valorization of their resources.
- To encourage sustainable management and responsible use of natural resources in arid areas in order to support long-term socio-economic development.
- To provide a platform for exchange and knowledge sharing between researchers, students and professionals on recent advances, techniques, and best practices related to arid ecosystems.

- Conférences topics

Topic 1	<u>Microbial ecosystems:</u> This axis explores the diversity, roles, and interactions of microorganisms (bacteria, fungi, archaea, etc.) in various ecosystems, particularly arid and semi-arid environments. It focuses on microbial functions in nutrient cycling, soil fertility, and ecosystem resilience
Topic 2	<u>Faunistic biodiversity:</u> This axis studies the diversity and distribution of animal species, from invertebrates to vertebrates, in natural and human influenced habitats. It aims to understand species adaptation, population dynamics, and conservation priorities.
Topic 3	<u>Floristic biodiversity:</u> Cet axe se concentre sur la diversité, la classification et les rôles écologiques des espèces végétales, en particulier dans les écosystèmes arides et menacés. Il contribue à la conservation de la flore.
Topic 4	<u>Agrosystem functioning :</u> This axis analyses the structure and sustainability of agricultural systems, focusing on soil-plant-animal interactions, water management and the integration of biodiversity. The aim is to improve agricultural productivity while preserving the ecological balance.indigène et à la restauration des habitats dégradés.

- Organization and Participation

- Detailed program and organizing committee

- Distributed materials

Each participant and guest received a tote bag containing:

- The conference program, agenda, and a pen.
- An eco-friendly “We Plant” pack including a small cactus plant, a pot bearing the conference logo, soil, and a spray bottle, all reflecting the ecological concept of the event.



The conference was attended by approximately 230 people who participated in the various sessions, including oral presentations, poster sessions, an exhibition, a symbolic planting activity, and a field trip. Participants included officials, academics, executive directors, teachers and researchers, journalists, students, and enthusiasts of arid zones.

- Opening Ceremony

The opening ceremony was held in Conference Room C1 of the Faculty of Natural and Life Sciences and Earth Sciences at the University of Ghardaïa. It was attended by the Vice-Rector for External Relations and Scientific Events, as well as the Dean of the Faculty of Natural and Life Sciences (SNV).

The dean **Dr. Mohamed KRAIMAT** of the faculty welcomed all participants, including guests, professors, and students, and gave a speech highlighting the importance of the conference and its main objectives. The conference was then officially declared open by the Vice-Rector for External Relations and Scientific Events, **Dr. Abdelrahim CHENINI**, after the welcome speech given by the President of the conference, **Dr. Amel HEROUINI**.

- Conference schedule

After the official opening, three plenary lectures were presented during the morning of 25/11/2025 (see programme). In the afternoon, workshops including oral presentations and poster sessions were held until 5:30 P.M.

On the second day, the programme started with three plenary lectures (two online and one presentiel). At 11:00 A.M., a coffee break was offered, followed by parallel oral sessions in the two conference rooms, C1 and C2. After lunch, a symbolic planting activity was organized. In the afternoon, workshops with oral and poster presentations continued, and the day concluded with the closing session at around 6:30 P.M.

On the third day, November 27, 2025, an excursion was organized to explore the Ghardaïa region. Participants first visited the ksar of Tafilalt, then strolled through the traditional souk in downtown Ghardaia, before going to Oulahhader Park in Sebseb and the surrounding landscapes of Sebseb and Metlili, where the first golden dunes appear. During a typical regional lunch, they discovered Saharan culture and daily life in this UNESCO World Heritage Site, bringing the day to a pleasant and enriching close.



- Organizations and institutions participating

Five international universities participated in the first **International Congress on the Valorization & Conservation of Arid Ecosystems (ICVCAE 2025)**. In addition, 30 national organizations and academic institutions took part in the event. These institutions include:

International universities

National organizations

Université de Neuchâtel (UniNE), Suisse.	Ghardaia University.
Université Miguel Hernández d'Elche, Espagne.	Kasdi MERBAH University, Ouargla.
Institut de recherche sur la protection des plantes, Égypte.	École normale supérieure de Ouargla.
Université Ain Shams, Le Caire, Égypte.	Ammar Telidji University - Laghouat (ATUL).
Centre de biotechnologie de Sfax, Tunisie.	USTHB, Bab Ezzouar University.
	Muhammed Bougara University -Boumerdès (MBUB).
	Ziane Achour – Djelfa University.
	University of El Oued.
	École Supérieure Nationale Kouba, Algérie.
	Ibn Khaldoun University, Tiaret 14000, Algeria.
	Mohamed El Bachir El Ibrahimi University. Bordj Bou Arreridj
	University Center of Tipaza Morsli Abdallah.
	École Supérieure Nationale Kouba, Alger..
	Adrar University Ahmed Draya.
	Tissemsilt University.
	Higher School of Saharan Agriculture – El Oued.
	University of Tamanrasset.
	M'sila University.
	Badji Mokhtar University, Annaba.
	8 mai 1945 University, Guelma.
	Batna University.
	Hassiba Benbouali University, Chlef.
	Ferhat Abbas University of Setif 1.
	Abou Bekr Belkaid University Tlemcen
	Mouloud Mammeri University, Tizi-Ouzou.
	Université d'Oum Université USTHB, Bab Ezzouar.
	Alger El Bouaghi.
	Université de Saïda
	Djillali LIABES University, Sidi-Bel-Abbès.
	Chadli Bendjedid University of El Tarf.
	Abderrahmane-Mira University Béjaïa .
	Mohamed Cherif Messaïdia University Souk Ahras.
	Blida University.



- Invited organizations and institutions

- Direction de l'Environnement de la wilaya de Ghardaia.
- Direction des Forêts des wilayas de Ghardaia.
- National Water Resources Agency (NWRA)
- The Commissioner for Agricultural Development in the Saharan Regions – Ouargla. (CADSR)
- Director of the Centre for Vocational Training and Apprenticeship—Cherif MESSAADIA.
- Director of Agricultural Services for the province of Ghardaïa.
- the Forest Conservator of the Wilaya of Ghardaïa.
- Director of Hydraulics for the province of Ghardaïa.
- Director of the Ghardaïa Meteorological Station.
- Director of the Office for the Development of Industrial Agriculture in Saharan Lands.
- Director of the Regional Plant Protection Station Lechbour-Ghardaïa.

- Recommandations et perspectives

Following the First International Congress on the Valorization & Conservation of Arid Ecosystems (ICVCAE 2025), held in Ghardaïa from 25 to 27 November 2025, the scientific committee—expanded to include additional contributors—and taking into consideration the proposals made by participants during the plenary discussions and workshop sessions, has consolidated the recommendations and future perspectives into three main categories:

1. Strengthen scientific research and international cooperation

- Arid and semi-arid ecosystems, which are strongly affected by climate change, soil degradation, and the overexploitation of resources, represent a priority area for research. In this context, it is strongly recommended to:
- Launch national and international research projects (PNR, CNEPRU, bilateral cooperation, Mediterranean and African programs, etc.) focusing on:
 - ✚ Microbial ecosystems (Topic 1): diversity, structure, and functions of microorganisms (bacteria, fungi, archaea, etc.) in arid soils, their role in biogeochemical cycles, soil fertility, and ecosystem resilience to drought.
 - ✚ Faunal biodiversity (Topic 2): inventories and monitoring of animal communities (invertebrates, reptiles, birds, mammals, etc.), study of adaptations to water and heat stress, population dynamics and identification of key species for conservation.



- ✚ Flora biodiversity (Topic 3): mapping and characterization of steppe and desert flora, study of xerophytic and endemic plants, role of vegetation in combating desertification and restoring degraded habitats.
- ✚ Agrosystem functioning (Topic 4): analysis of agricultural systems in arid environments (crops, livestock, grazing), irrigation water management, integration of biodiversity into agricultural practices, adaptation of agriculture to climate change.
- Sustainable use of natural resources: medicinal and aromatic plants, pastoral products, scientific ecotourism, microbial bioresources of biotechnological interest, etc.
- Create or strengthen multidisciplinary research laboratories and teams dedicated to arid zones (ecology, biology, microbiology, agronomy, hydrology, socio-economics, modeling, etc.). These structures should:
- Develop databases on arid ecosystems (biodiversity, soils, climate, land use), using GIS and remote sensing in particular.
- Serve as a hub for international collaborations, joint supervision of theses, and joint research projects.

2. Education (training)

In order to consolidate student training and meet the needs of arid regions, it is recommended that:

- Develop new Bachelor, Master and PhD programs on arid ecosystems, environmental microbiology, biodiversity conservation and sustainable agrosystems.
- Orient internships, field trips and final-year projects towards key arid and semi-arid sites and multidisciplinary themes.
- The microbiomes of arid soils, environmental microbiology, and microbial biotechnology.
- The biodiversity of fauna and flora in arid environments and conservation strategies.
- The functioning of agrosystems in a context of water stress (agroecology, water management, sustainable agricultural practices).
- Set up professional and continuous training for local stakeholders (farmers, pastoralists, managers, NGOs) on sustainable resource management and adaptation to climate change.
- Encourage cooperation agreements between universities, research centers and local/national institutions involved in arid areas management.
- Environmental, agricultural, and water management departments,
- Agricultural and pastoral research institutes,
- Organizations combating desertification,
- Nature parks, nature reserves, and biodiversity observatories.
- These partnerships will enable:



- Training content to be adapted to real needs in the field,
- Interns to be welcomed and theses to be co-supervised,
- Bridges to be built between teaching, research, and application.

3. Networking, communication, and policy support

- Create an “Arid and Semi-Arid Ecosystems Network” bringing together researchers, students, and professionals with a view to establishing a scientific society.
- Create a dedicated web platform and a regular electronic newsletter to share data, research findings, training opportunities, and events.
- Involve universities and research centers in national and regional strategies to Combat desertification, conserve biodiversity, and support sustainable development in arid regions.
- Maintain the scientific dynamism of ICVCAE by regularly organizing new editions in different arid regions and universities.

For/ the Scientific Committee
Pr. BENRIMA Atika

For/ the Organizing Committee
Dr. HEROUINI Amel



CHAIR OF CONGRESS

Dr. Amel Herouini