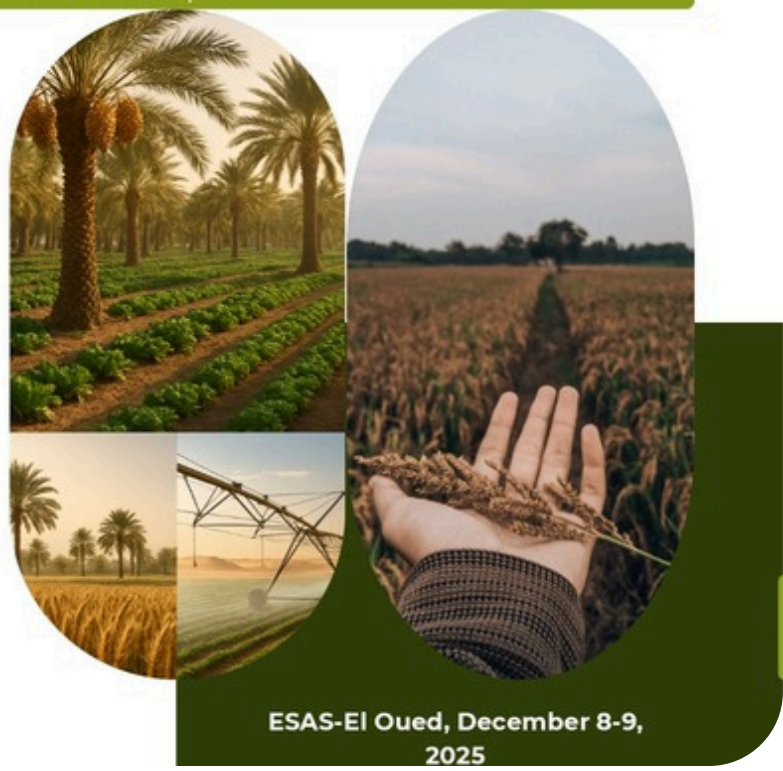
الجمهورية الجزائرية الديمقراطية الشعبية
وزارة التعليم العالي والبحث العلمي
– المدرسة العليا للفلاحة الصحراوية - الوادي
2nd National Workshop

Saharan Agriculture: Integrating Plant Protection with Soil and Water Sustainability Challenges

الزراعة في الصحراء: دمج حماية النباتات مع تحديات استدامة التربة والمياه



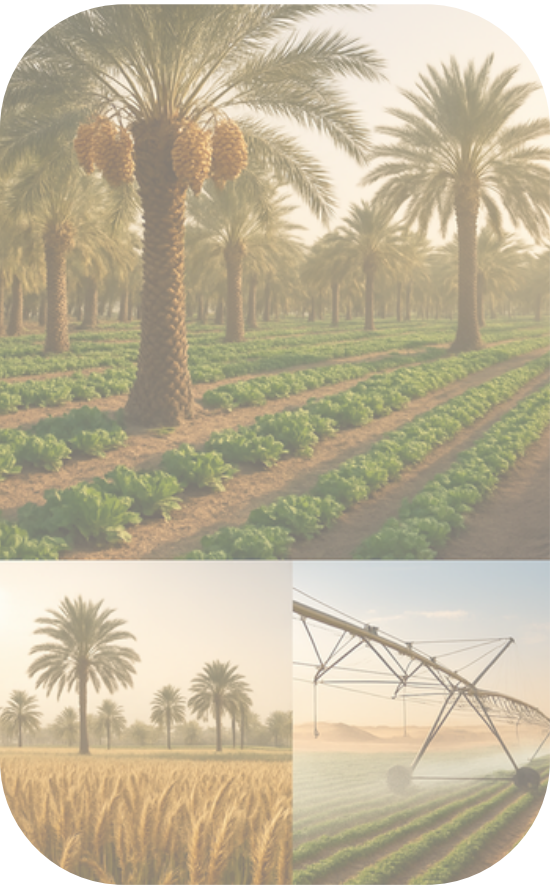
أنتج بحكمة اليوم
لتحافظ على المستقبل

Produce Wisely Today,
Preserve the Future

ESAS-El Oued, December 8-9, 2025

The Second National Workshop

Saharan agriculture: Integrating Plant Protection with Soil and Water SustainabilityChallenges



Higher School of Saharan Agriculture - El Oued

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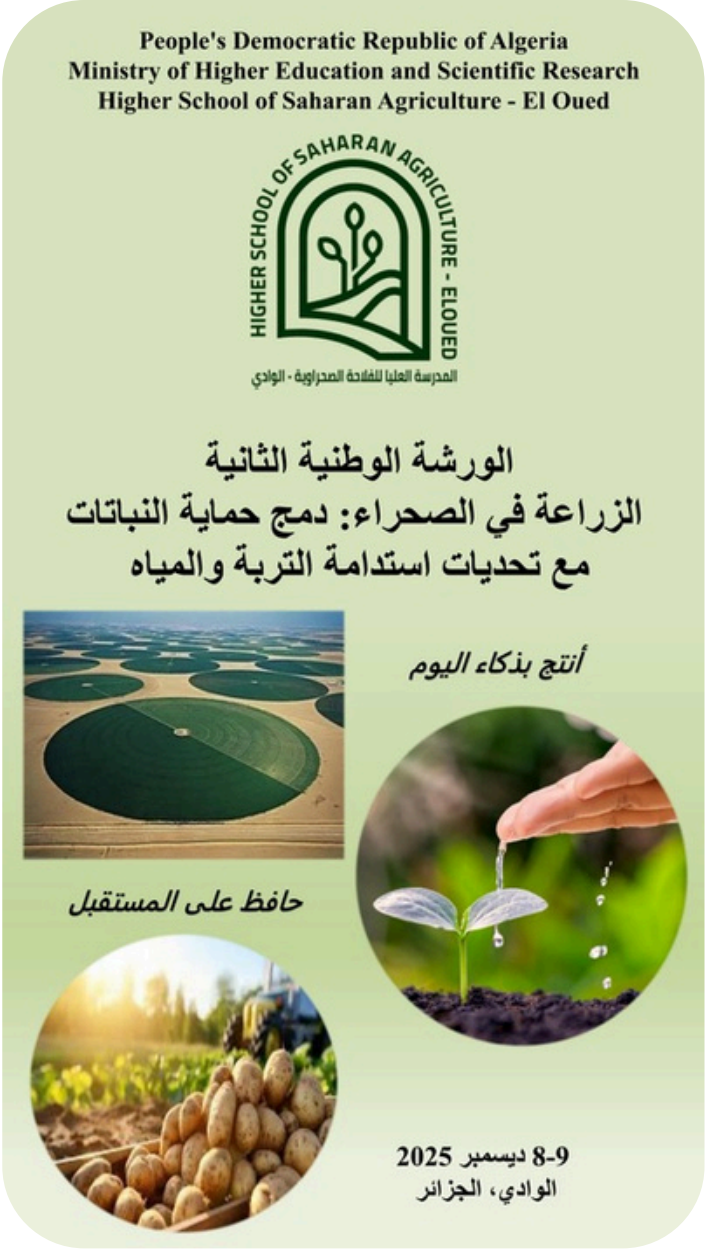
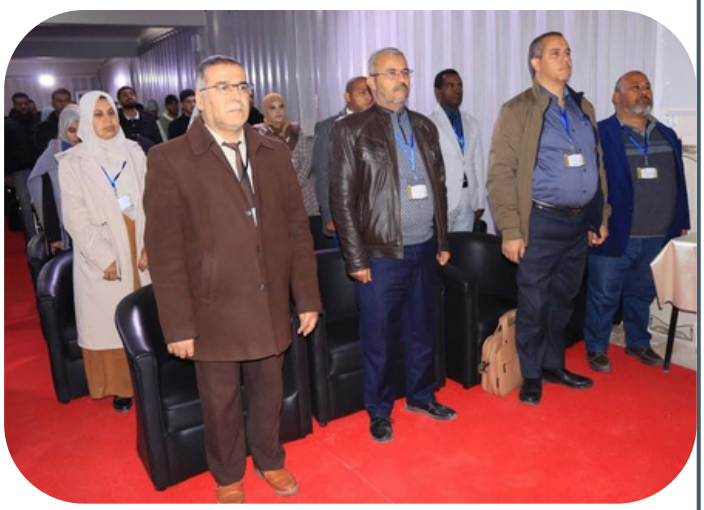
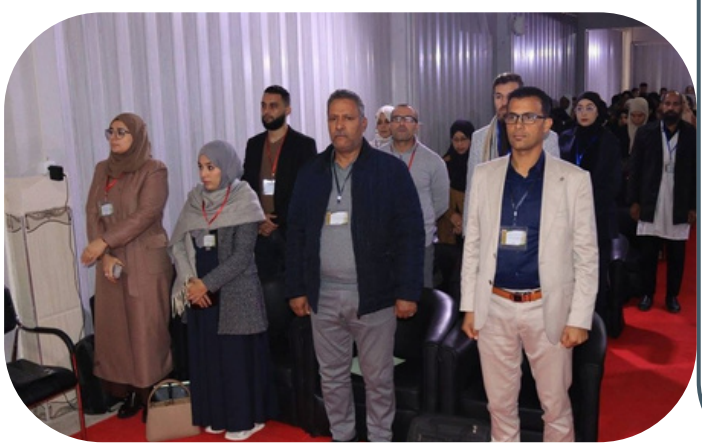






INTRODUCTION

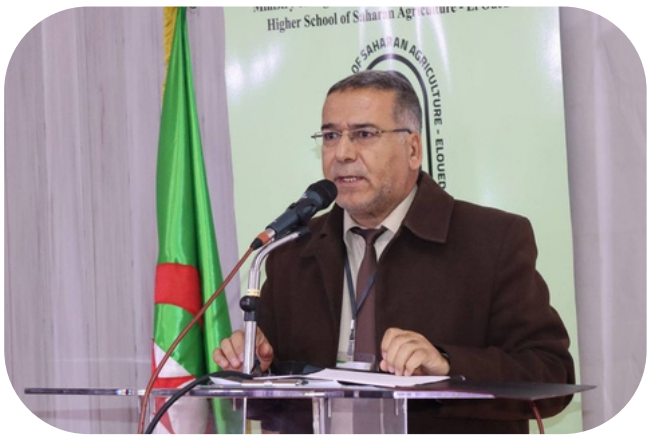
In the pursuit of promoting scientific dynamism and fostering the exchange of expertise among researchers and practitioners, while also linking academic knowledge to the practical challenges encountered in saharan agriculture, the Higher School of Saharan Agriculture in El Oued convened its second national workshop, entitled "Saharan Agriculture: Integrating Plant Protection with Soil and Water Sustainability Challenges." This two-day workshop, held on December 8th and 9th, 2025, experienced vigorous participation from professors, students, and experts. It primarily targeted fourth- year students specializing in plant protection, with the objective of enhancing the scientific understanding of water security, soil sustainability, and plant protection within the desert ecosystem.

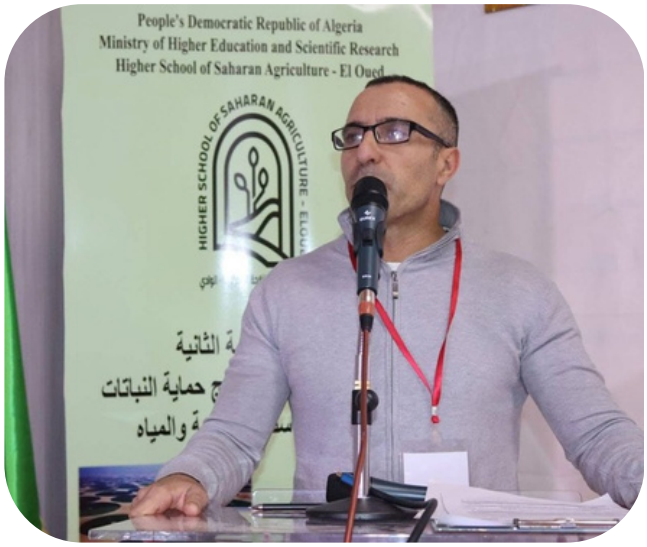
This workshop highlights the role of Saharan agriculture in achieving food security despite challenges such as water scarcity and salinity, soil degradation, and environmental impacts linked to irrigation practices and excessive chemical use. It aims to encourage scientific exchange and propose practical, locally adapted solutions that support sustainable agricultural production and strengthen food security, in line with World Soil Day on December 5.

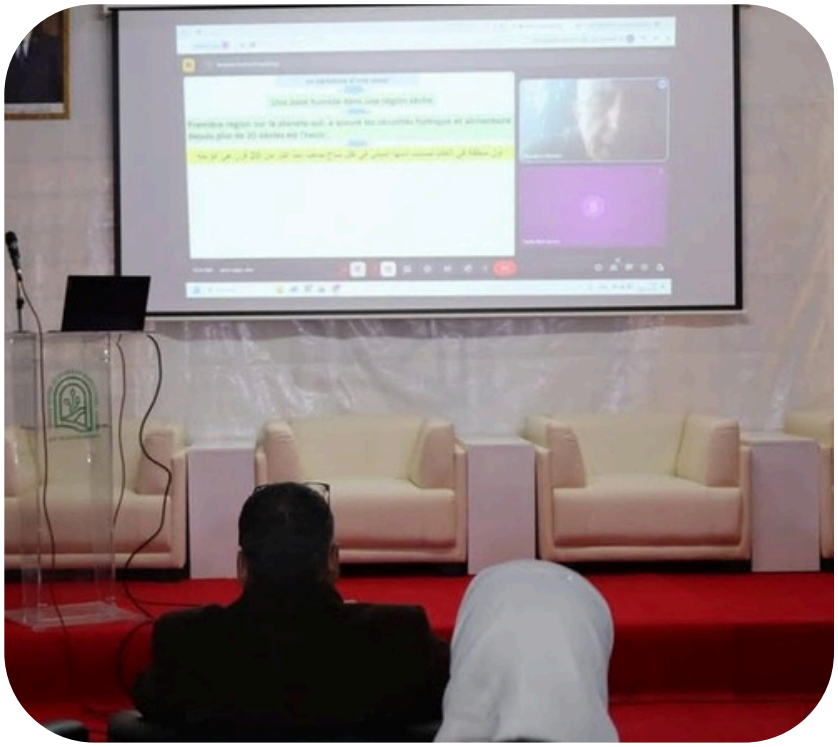
Proceedings of Day One (December 8, 2025)

On the first morning, the Higher School of Saharan Agriculture held an opening session to start the workshop. The Director, Professor El-Habib Guedda, gave a welcome speech. Then Dr. Abdelmonaim Khemmouli, representing the scientific committee, spoke. They both explained that these scientific events are important because they help students build scientific and practical skills, and connect classroom knowledge with real work in Saharan agriculture.

The day continued with specialized talks about water and soil issues in Saharan areas. Professor Boualem Remini gave an online presentation about water security in Algeria. He explained the current water situation and the main challenges of managing and protecting water resources in Saharan regions. He also shared data and statistics about water use and its effects on agricultural development.







Proceedings of Day One (December 8, 2025)

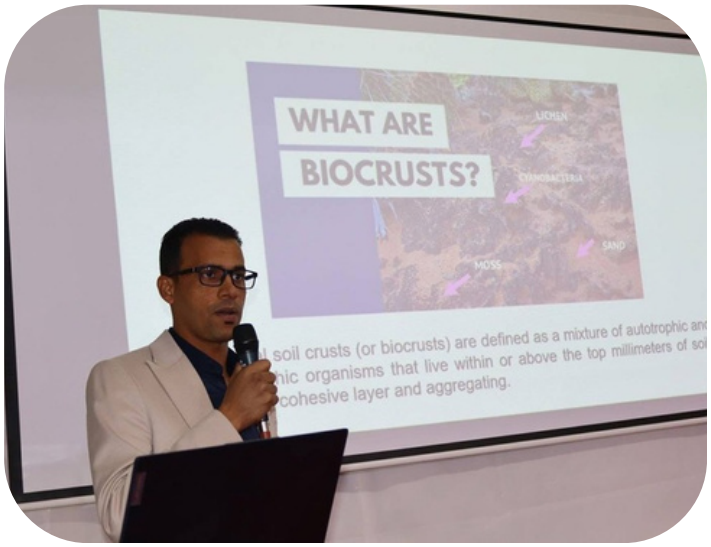
Dr. Smail Mehda then gave a talk on Saharan soil microbiology. He presented results from a study that isolated and identified some cyanobacteria strains in soils from El Oued Province. He highlighted how microorganisms can help improve soil quality.

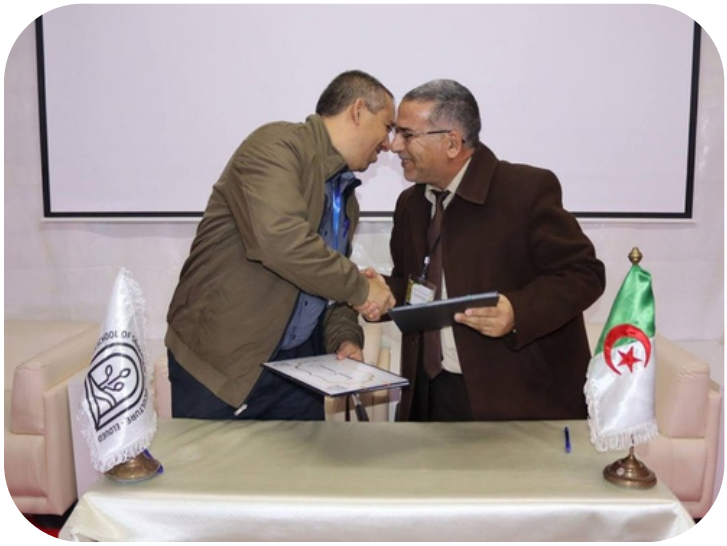
After these talks, there was a discussion session where participants asked questions and shared ideas. This helped everyone understand the topics better and encouraged scientific exchange.

The morning ended with a presentation by Mr. Abdelsattar Cherif, a Plant Health Inspector at the Directorate of Agricultural Services of El Oued Province, titled: “Main Diseases and Pests Affecting Date Palms in the Oued Souf Region.” He described the most common diseases and pests found in local oases, their signs and symptoms, and how they affect palm health and date production. He also explained the main reasons for their spread, especially climate conditions and some farming practices, and he gave practical advice on prevention and control.

The session ended with an open discussion and Q&A, allowing experts, students, and professors to exchange experiences before the morning activities concluded.

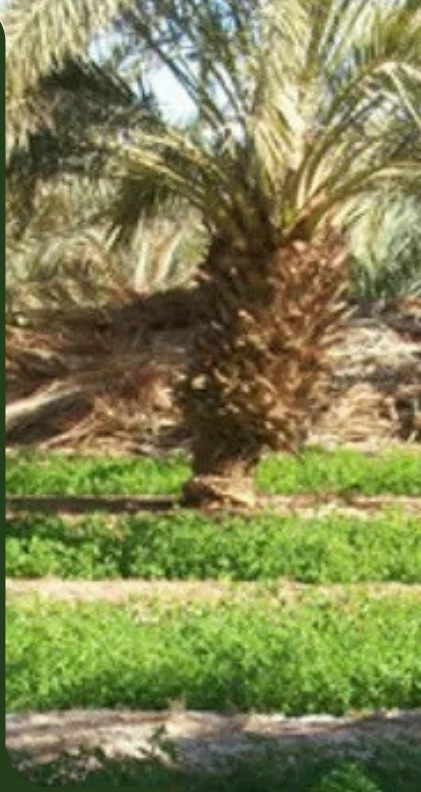
Before the end of the morning session, the activities of the first day also included the signing of a partnership agreement between the Higher School of Saharan Agriculture of El Oued and the Martyr Mkaddem Mabrouk Vocational Training and Apprenticeship Center in Debila (El Oued). This agreement aimed to strengthen cooperation between higher education institutions and vocational training centers, promote the exchange of expertise, and improve practical training in line with the needs of local development in the field of Saharan agriculture.

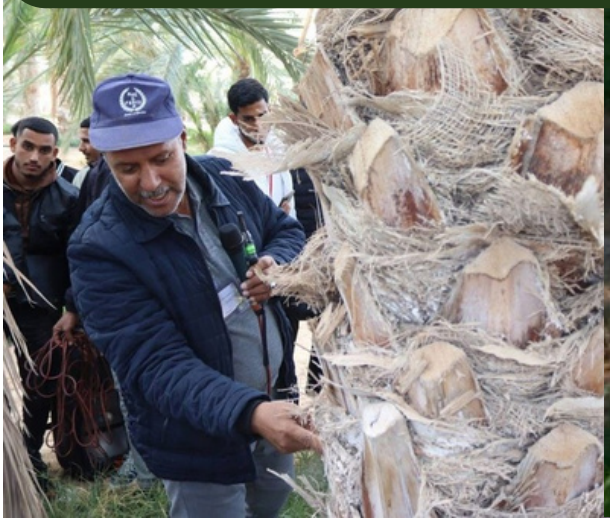




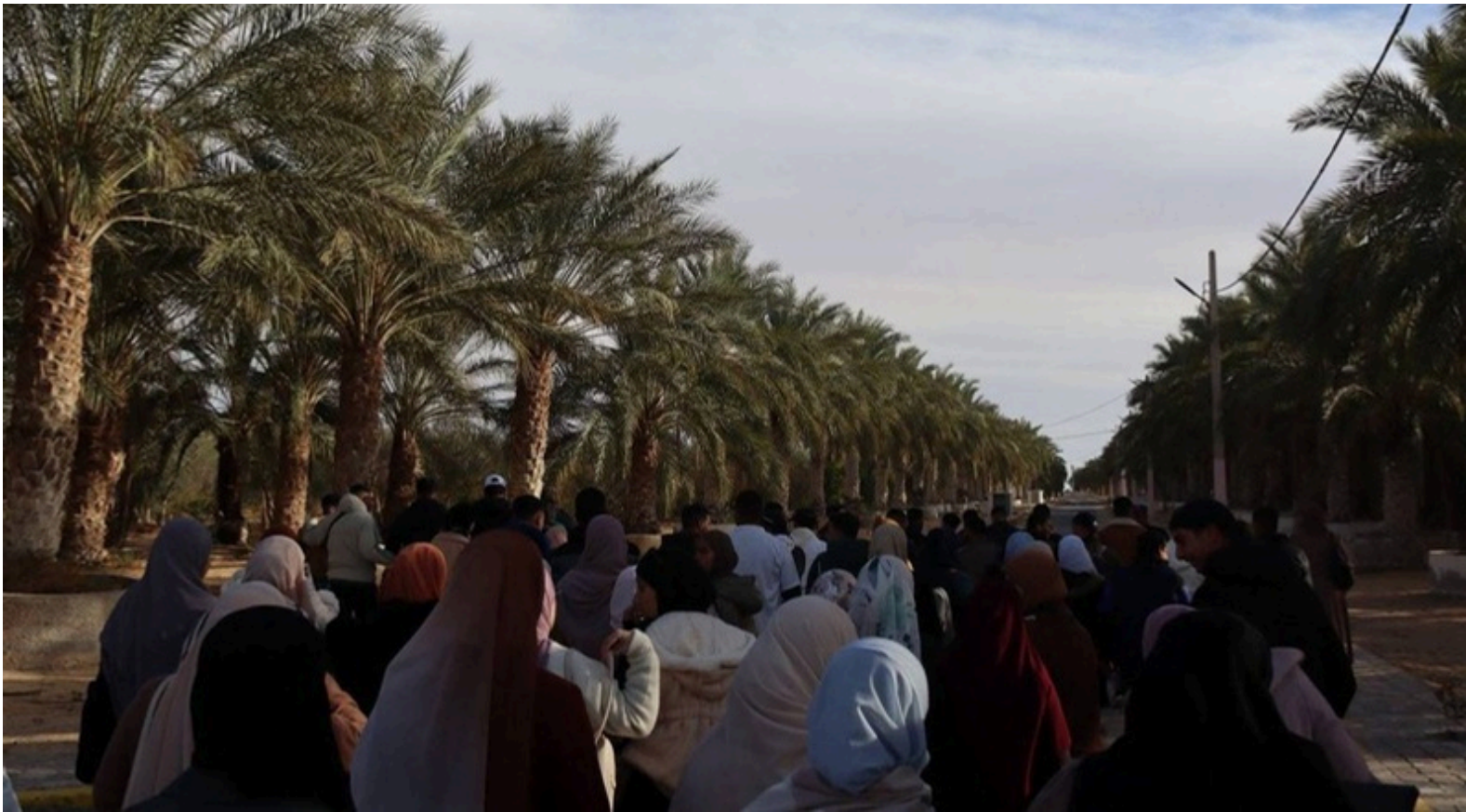
Field visit

To strengthen the practical aspect of the workshop, the afternoon of the first day was devoted to a field visit to a farm in Ganaouba, El Oued Province, within the municipality of Trifaoui, to observe field issues related to date palm health in real conditions. Fourth-year State Engineering students specializing in Plant Protection received direct supervision from expert engineer Abdel Sattar Cherif of the Directorate of Agricultural Services of El Oued and Professor Kamal Bensalah of the Scientific and Technical Research Center for Arid Regions in Biskra. The supervision focused on identifying common local pests, recognizing symptoms of infestation, field monitoring, and appropriate prevention and control measures.
This visit strengthened the link between theoretical knowledge and practical application and supported the workshop's objective of translating scientific knowledge into solutions adapted to the realities of Saharan agriculture.





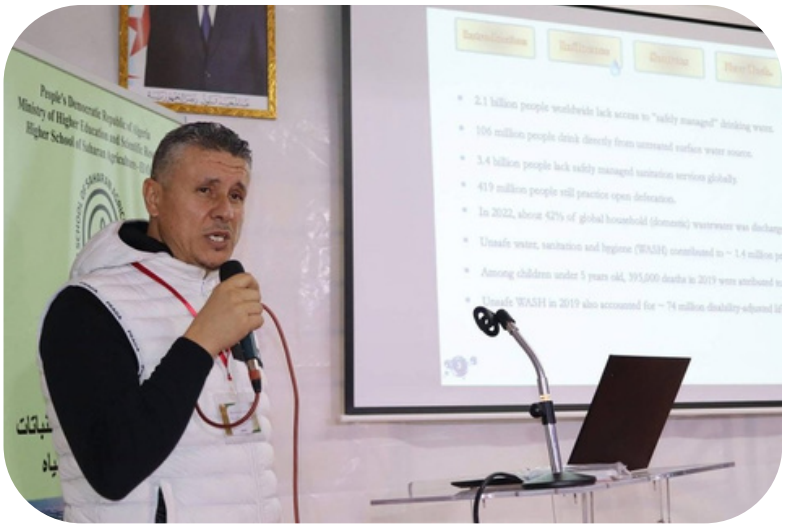
Ganaouba farm

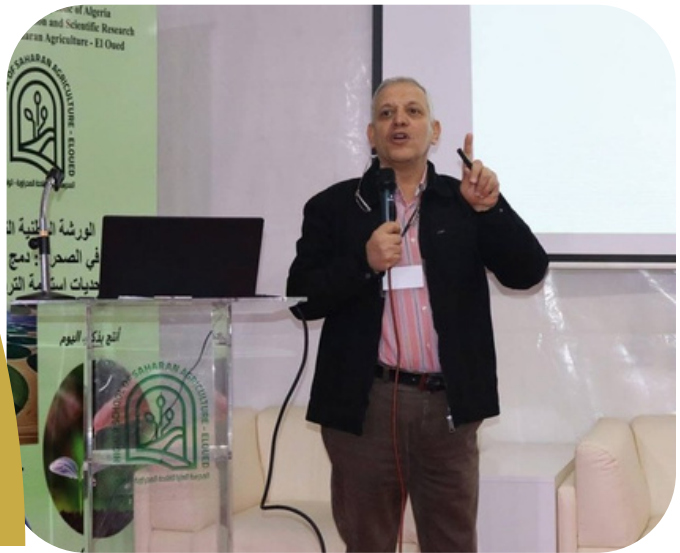


Proceedings of Day Two (December 9, 2025)

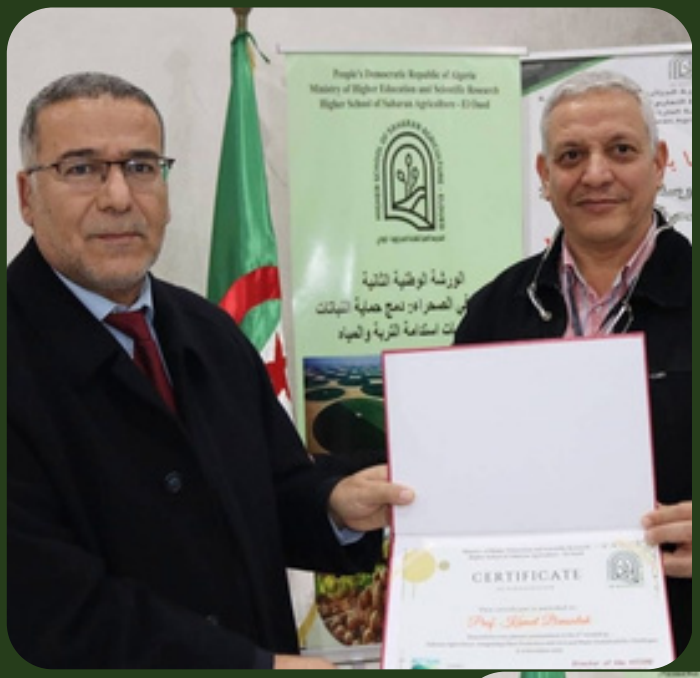
On the morning of the second day, the workshop continued with scientific lectures. The sessions opened with a presentation by Professor Kamal Bensalah entitled “Protecting plants... A guarantee for clean crops to ensure food security and sustainable development.” He discussed the basic principles of plant protection and stressed the importance of adopting integrated approaches to reduce agricultural losses and limit the excessive and improper use of chemical inputs, in order to ensure product quality and preserve environmental balance.

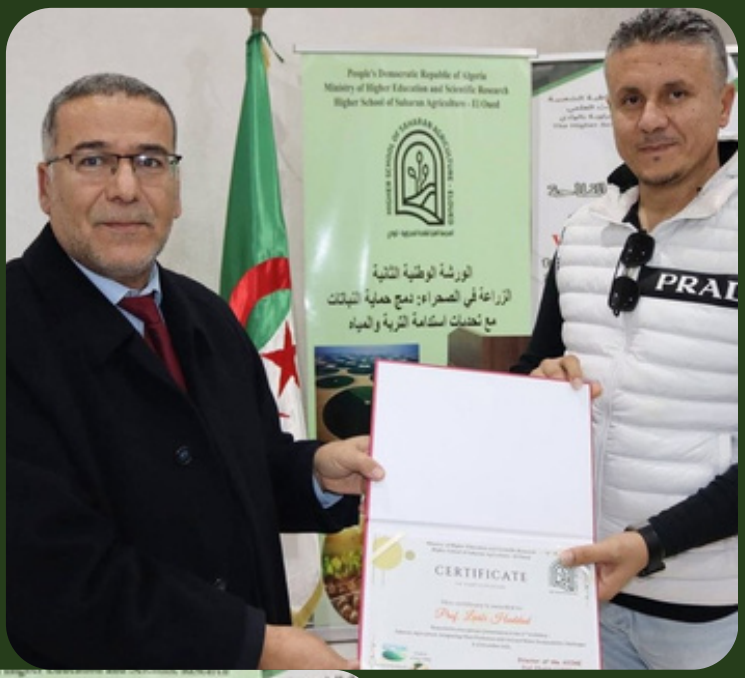
Professor Larbi Haddad then delivered a lecture entitled “Polluted Water in Saharan Agriculture: Challenges, Impacts, and Sustainable Treatment Strategies.” He addressed the main sources of water pollution in Saharan agricultural activities and their effects on soil, plants, and public health. He also presented several scientific solutions and approaches aimed at water treatment and reuse within a sustainable framework. These presentations were followed by a discussion session and a round table that allowed participants to exchange views and discuss proposed ideas.

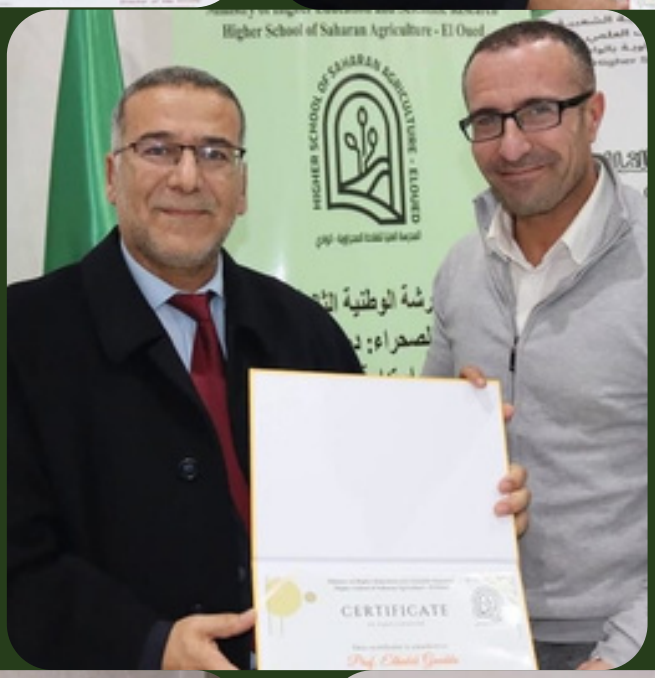


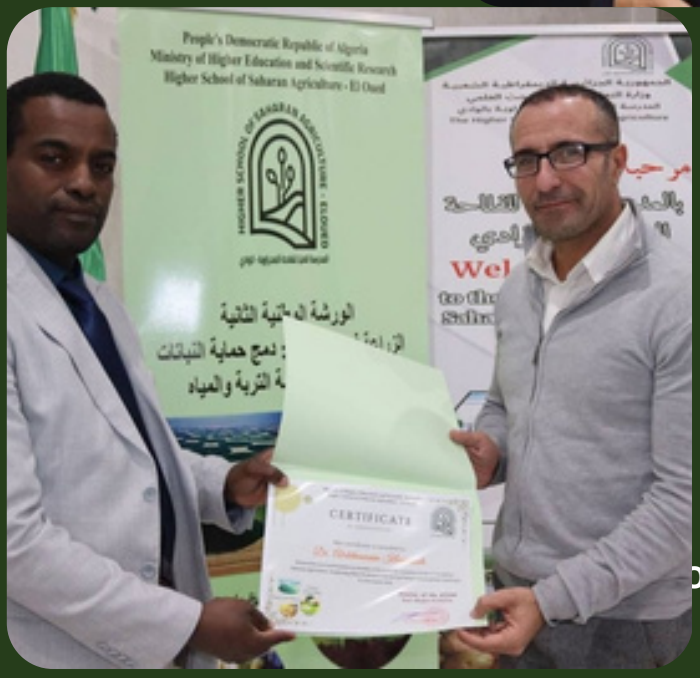


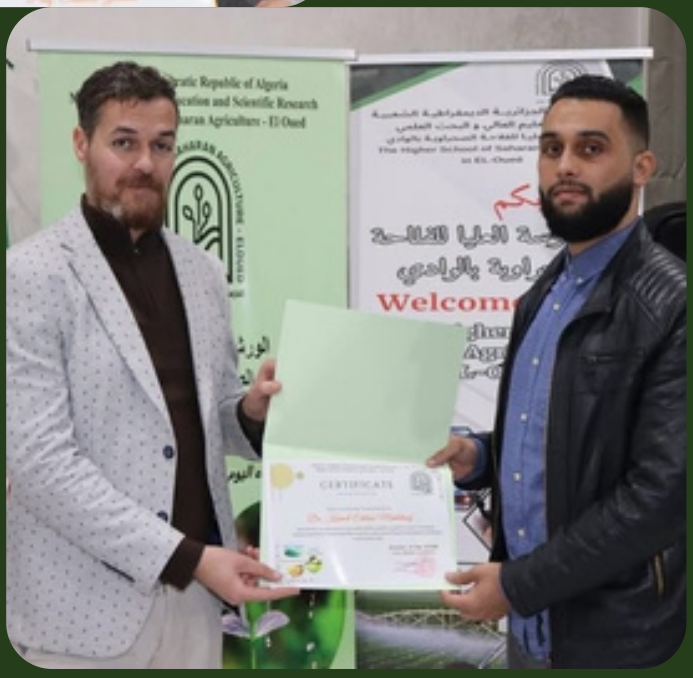
Conclusion and Recommendations











Conclusion and Recommendations

The workshop concluded with an evaluation of the scientific presentations and discussions, confirming that it successfully achieved its educational objectives by linking theoretical knowledge with real field challenges in Saharan agriculture. The diversity of themes addressed, and the field visit, enabled students to directly observe field problems and connect them with scientific diagnosis and intervention methods.

Key Recommendations:

- Strengthening applied scientific research in the fields of soil and water sustainability and plant protection in Saharan environments, with a focus on field-based and practical studies.
- Developing climate monitoring and observation systems by expanding and modernizing meteorological station networks and using remote sensing technologies to accurately assess water requirements.
- Rationalizing water use through the adoption of water-saving irrigation techniques and increasing awareness and training programs for farmers on water conservation.
- Enhancing continuous training for farmers and professionals in plant protection, integrated pest management, and reducing the improper use of chemicals.
- Establishing specialized technical stations such as ITGC, INRA, CRSTRA, and ITDAS to identify suitable crop varieties and monitor groundwater levels and water quality.
- Encouraging the creation of start-ups and innovative projects in Saharan agriculture, particularly in the field of biological control of agricultural pests.
- Continuing the organization of scientific events and applied workshops focused on Saharan agriculture, given their role in promoting scientific awareness and sustainable agricultural development.