

SDG 15 – Life on Land **Assiut University Report 2024-2025**

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Revised by: International Ranking Office

Assiut University continues its leadership in environmental protection and biodiversity conservation through policies, research, community engagement, and sustainable land management practices. This report summarizes the University's contributions aligned with SDG 15: Life on Land.

1. Supporting Land Ecosystems Through Education

- Assiut University organizes workshops and events promoting conservation and sustainable land use.
- The Center for Sustainable Development provides free programs on land sustainability.
- The Faculty of Agriculture conducts research in soil protection, land use change, and ecosystem restoration.

2. Botanical Garden & Biodiversity Enhancement

- The University inaugurated an **educational Botanical Garden** with 1,864 plant species.
- Assiut University in QS Sustainability Ranking achieving fifth position among Egyptian universities. This milestone highlights the university's commitment to

expanding eco-friendly initiatives, increasing green spaces, and strengthening training and research programs in sustainable development.

- New training partnerships established for environmental management.

The university collaborates with government organizations, NGOs, and international organizations on projects aimed at promoting land conservation and sustainable utilization. These collaborations involved joint research projects, shared events, and cooperative educational programs.

- The cooperation protocol between Assiut University and the Egyptian-Gulf Company for Desert Land Reclamation, a delegation from the Faculty of Agriculture. the jojoba project in Paris Center in the New Valley Governorate.
- Activities of the Second Environmental Forum COP28 – ASSUIT” (November, 2023).
- The university actively contributes to the presidential ‘100 Million Trees’ initiative by planting hundreds of seedlings both on campus and in surrounding areas, complemented by awareness programs on water resource conservation and environmental sustainability

3. Green Infrastructure & Research Initiatives

- Rooftop farming projects enhance urban greening and food security.



- The university updated its strategic plan to integrate sustainability goals, focusing on green infrastructure, renewable energy, and biodiversity conservation. This plan aligns with Egypt’s Vision 2030 and the UN SDGs, ensuring that research and campus development support environmental resilience.

- Assiut University publishes several academic journals featuring research on soil management, water conservation, and green infrastructure planning. These publications serve as a scientific foundation for campus greening initiatives and broader regional sustainability efforts.

4. Sustainable Food Policies

- The university launched a **rooftop cultivation project** to grow vegetables, medicinal, and aromatic plants on campus buildings. This initiative supports food security, reduces climate impact, and promotes sustainable agriculture practices.
- **Cassava cultivation project:** Assiut University established a research-based cassava cultivation program to produce gluten-free flour and support food security. This project aligns with sustainable development goals and modern agricultural practices.



5. Maintaining & Extending Ecosystems

- Biodiversity research across faculties.
- Maintenance of green areas, ornamental farms, arboretums, and greenhouses.





- Extension Farm (20 acres) serves research and student training.





6. Ecosystem Educational Programs

- Programs offered by Faculties of Science and Agriculture on biodiversity, pollution, ecosystem management, and soil conservation.
- Workshops and conferences on plant tissue culture, genetics, biodiversity assessment.

7. Land Management & Community Training

- The Soil Laboratory for Analysis and Technical Consultations offer the following training courses:

- Physical analyses of soils
- Chemical analyses of soils
- Analysis of nutrients in plants and soils
- Chemical and physical analyses of water
- Fertilizer analysis
- Conducting analyses related to assessing soil, water, and plant contamination with heavy metals and methods of remediation
- Land survey and evaluation for optimal use
- Courses include soil, water, fertilizer analysis, and land evaluation.

8. Policies Supporting Conservation

- Policies ensure sustainable management of drylands and terrestrial ecosystems.

- Policies established in 2016 and reviewed in 2023.

9. Monitoring IUCN Species

- No formal policy, but University monitors endangered species including Egyptian Vulture and Greater Spotted Eagle.

10. Biodiversity in Campus Planning

- Biodiversity is integrated into construction and green building policies.

11. Alien Species Control

The University monitors and pest control research in the Faculty of Agriculture.

Isolation, Identification And Efficacy Of Three Bacterial Isolates Against The Red Palm Weevil, *Rhynchophorus ferrugineus* (Olivier) (Coleoptera: Curculionidae)

Research Abstract

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Description

The red palm weevil (RPW), *Rhynchophorus ferrugineus* (Coleoptera: Curculionidae), overruns date palm ranches in most Oases of Saudi Arabia and causes massive economic losses. Integrated pest management (IPM) of the RPW by biocontrol agents of bacterial isolates was the primary aim of the present study. Thirty-seven bacterial isolates were isolated from the larvae of *R. ferrugineus*, which were collected from infested Phoenix dactylifera trees growing in different parts of Saudi Arabia. 16S rDNA sequencing showed that the isolated bacteria were: *Serratia marcescens*, *Klebsiella pneumoniae* and *Bacillus thuringiensis*. The potential of these isolates was tested against *R. ferrugineus* in the laboratory. The use of these three isolates showed significant mortality percentages against *R. ferrugineus*. The highest reduction in mortality was recorded at the concentration of 1×10^8 CFU/ml; *B. thuringiensis* isolate displayed the highest potency in mortal percentage rate (100%), 4 days post-treatment, followed by *S. marcescens* isolate after 5 days, and then *K. pneumoniae* isolate after 6 days. These results suggest that the use of these bacterial isolates was very useful in *in vitro* experiments, and it may consider those bacterial strains of interest as a potential biocontrol agent of *R. ferrugineus*.

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Formaldehyde's Insecticidal Potential On Immature Stages Of Red Palm Weevil (Rhynchophorus Ferrugineus)

Research Abstract

Red palm weevil (R.P.W.) *R. ferrugineus* (Coleoptera: Curculionidae) is the main date-injury palm insect in Egypt. This insect became the most destructive pest for date palms. All research seeks out safe methods for controlling this pest. This study aims to use eco-friendly and safer methods to manage R.P.W. However, the effect of Formaldehyde needs more research. The phrase "formalin" refers to the gas formic aldehyde, CH₂O, which is a 40% solution of Formaldehyde in water. The results showed that concentration (40%) had a significant impact on larvae in their second instar and newly hatched red palm weevil among all concentrations after exposure to a toxic zone for ten days. The results revealed that there was an increase in larvae mortality by increasing the duration of exposure to Formalin, and this may depend on the accumulation of Formalin on target organs. Data reported that Formalin is effective for the larvae. So, Formalin could interrupt the life cycle of red palm weevil and might be suitable for integrated pest management of this pest as a protective or curative agent. In terms of LC₅₀ and LC₉₀, the relative toxicity of the tested concentrations at the LC₅₀ and LC₉₀ levels showed that the toxicity of Formalin on newly hatching was the most effective among other larvae of red palm weevil. Regarding LT₅₀ and LT₉₀ values, formalin application demonstrated great activity against *R. ferrugineus*, and the needed time causing 50 and 95% mortality (LT₅₀ and LT₉₀) decreased when the formalin concentration increased.

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Research Date

Fri, 1 Mar 2024 - 12:00

Research Department

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Research File

Aly 2024.pdf (688.63 KB)

Research Journal

Aswan University Journal of Environmental Studies

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12. Community Partnerships

- The Faculty of Agriculture organizes workshops and training sessions for farmers and local stakeholders on sustainable land management and ecosystem preservation. The Soil Laboratory for Analysis and Technical Consultations (at the Faculty of Agriculture) provide soil, water, and plant analysis services to local farmers and organizations, helping them adopt sustainable land management practices.
- The Agronomy Department works with scientific organizations on applied research and training to solve agricultural problems, focusing on crop production and sustainable land use.
- Collaboration with government and NGOs on the "100 Million Trees" initiative, Jojoba plantations, and farmer training.