

Evaluation of Arbuscular Mycorrhizal Fungi Diversity in Algerian Legumes (*Medicago sativa*, *Medicago truncatula*, and *Trifolium rubens*) and Their Effects on Soil Chemical, Physical, and Microbial Characteristics

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Introduction:

- *Medicago sativa*, *Medicago truncatula*, and *Trifolium rubens* are leguminous species widely distributed in Algeria.
- These species are ecologically and agriculturally significant, contributing to desertification control and livestock fodder.
- Arbuscular mycorrhizal fungi (AMF) form symbiotic relationships with plant roots, enhancing nutrient uptake.
- This study investigates AMF colonization in the roots of these legumes and their impact on soil properties.
- Comparative analysis focuses on mycorrhizal infectious potential and soil physicochemical attributes.

Results :

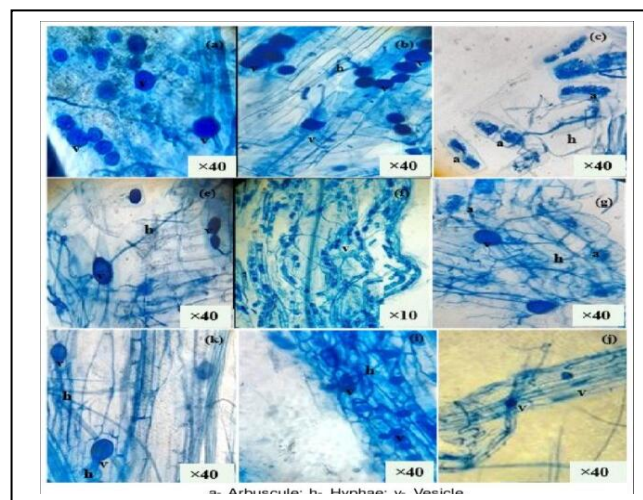


Figure 1: Endomycorrhizal structures in the roots of *Medicago sativa* (a, b and c), *Medicago truncatula* (e, f and g) and *Trifolium rubens* (k,i and j) Magnification ×40 and Magnification ×10.

- Mycorrhization frequency exceeded 80% in *Medicago sativa*, *Medicago truncatula*, and *Trifolium rubens*.
- *Medicago truncatula* showed significantly higher mycorrhizal infectious potential compared to *Trifolium rubens*.
- AMF colonization in *Medicago truncatula* positively influenced soil phosphate and nitrogen content.
- Soil biological fertility was enhanced, with *Medicago truncatula* exhibiting the most pronounced effects.
- Comments: These findings highlight the potential of *Medicago truncatula* as a bio-fertilizer and nurse plant.

Conclusion :

- *Medicago truncatula* demonstrates superior AMF colonization and soil fertility enhancement.
- These legumes can be utilized as nurse plants to facilitate ecological restoration.
- Further research is needed to optimize their application in sustainable agriculture.

References :

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