IMPACT OF CONTROLLED MYCORRHIZATION ON THE GROWTH OF BLACK LOCUST SEEDLINGS (Robinia pseudoacacia L.)

Dahbia Saad[1*], Warda Sidhoum[1], Soulef Dib[1], Faiza Chaib[2]

[1]Department of Biotechnology, Faculty of Natural and Life Sciences, University of Oran 1, ALGERIA
[2]Department of Biology, Faculty of Natural and Life Sciences, University of Oran 1, ALGERIA

*corresponding author: d.ahvouvasaad31@Gmail.com

The Mediterranean basin is confronted with major environmental challenges such as the decrease in agricultural and agroforestry areas as well as the loss of biodiversity, exacerbated by human activities and climate change. A comprehensive strategic approach is needed to effectively manage these ecosystems by preserving natural habitats and preventing socio-economic crises. The introduction of black locust in Algeria for reforestation and soil rehabilitation represents a promising opportunity. The study aims to establish a symbiotic association between black locust and arbuscular mycorrhizal fungi (AMF) to enhance its ecological capacities. The objective is to innovate in nursery plant production by using controlled mycorrhization. In methodology, data were collected after five months of cultivation by comparing mycorrhized and non-mycorrhized black locust seedlings. Growth indicators such as height, root length, and biomass were evaluated. Assessment of root mycorrhization as well as microscopic observation and analysis of sporadic density were performed. The results showed that mycorrhization had a significant beneficial effect on black locust growth, with a strong dependence on this association. Mycorrhized seedlings exhibited improvement in height, root length, and biomass compared to non-mycorrhized ones. An abundance of specific mycorrhizal structures and a high diversity of AMF species were observed. In conclusion, the symbiotic interaction between black locust and AMF is crucial and could be utilized for the ecological restoration of degraded land. This approach offers sustainable management of agroforestry ecosystems in the face of current environmental challenges, thereby contributing to reforestation and soil rehabilitation in the Mediterranean basin.