

Influence of the arbuscular mycorrhizal fungus *Glomus intrarradices* on the saline stress physiology of *Lotus glaber*.

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Lotus glaber is a glycophytic, perennial legume from Europe that occurs widely in saline habitats. Previous observations indicate the occurrence of genotypes highly tolerant to salinity in different populations of *L. glaber* (Mujica and Rumi, 1997). Several workers have shown that AM fungi protect the plant against salinity (Al-Karaki *et al.*, 2001; Feng *et al.*, 2002). In turn, a high diversity of AM fungal colonization patterns in roots of *L. glaber* was found in fields characterized by their high salinity (Sannazzaro *et al.*, 2004).

Our aim was to evaluate the effect of mycorrhizal colonization on growth response to salt stress in two genotypes of *L. glaber* differing in their tolerance to salinity. We also hypothesized that polyamines, small organic cations that are thought to play a role in the plant responses to salt stress (Bouchereau *et al.*, 1999; Simon-Sarkadi *et al.*, 2002) are involved in such a process.

The experiment consisted of a randomized block design with two factors: (1) mycorrhizal treatments (with or without AM fungus) and (2) two salinity levels of 0 and 200 mM NaCl. *L. glaber* plants colonized by *G. intrarradices* grew better than non-AM ones, particularly under saline condition, where they showed higher values of net growth, shoot/root ratio, K/Na rate, and protein and chlorophyll contents. An increase in total free polyamine content of mycorrhized *L. glaber* plants compared to non-mycorrhized ones, suggests that these amines may be involved in the salt stress alleviation of this species. The increment in spermine levels in sensitive *L. glaber* plants grown under salt stress condition could be due to de novo synthesis from its metabolic precursors. In addition, high proline levels were observed under salt stress conditions in both genotypes. Our results interestingly indicate that *G. intrarradices* established a more efficient symbiosis with the tolerant than with the sensitive genotype. Results suggest that the fungal symbiont could play an important role in the adaptation of *L. glaber* plants to salt stress under field conditions.

References

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