

Influence of soil salt accumulation on symbiotic microorganisms in the root of *Tamarix ramosissima*

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Symbiotic microorganisms (mycorrhizal fungi, endophytic fungi, and endophytic bacteria) play important roles in the growth and survival of plants. Tamarisk species also have these symbiotic microorganisms and these symbioses may have important roles in the establishment and growth. But there is little study about the symbioses. In this study, we examined the symbiotic microorganisms in the roots of *Tamarix ramosissima*. Five root and soil samples were collected in Virgin River, Las Vegas Wash, Topock Marsh, Wilson Road, and Salton Sea. Concentrations of nitrogen, phosphorus, sodium, potassium, magnesium, and calcium in soils were examined. 20 cm of the roots were used for the observation of arbuscular mycorrhizal fungi, and examined mycorrhizal colonization rates. DNA was extracted from the roots and amplified 16S ribosomal RNA gene of bacteria and 18S ribosomal RNA gene of fungi. Then, T-RFLP analysis was conducted. By this analysis, diversity and similarity of endophytic bacteria and fungi among sampling sites were compared. Gene cloning was also conducted to identify the representative bacterial and fungal species. Sodium concentration was highest in Salton Sea. Mycorrhizal colonization rate was lowest in Salton Sea. Diversity of endophytic bacteria and fungi did not differ among five sites. Species composition of bacteria was different in Salton Sea. These results suggest that symbiosis with arbuscular mycorrhizal fungi declines and symbioses with endophytic bacteria and fungi become important in the salt accumulated site.