

研究论文

# 种植盐地碱蓬改良滨海盐渍土对土壤微生物区系的影响

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**摘要** 利用盐生植物盐地碱蓬对天津河口滨海盐碱地进行生物修复, 研究了其对土壤微生物区系的影响。结果表明, 种植区碱蓬根系土壤的可溶性盐分与对照土壤相比下降了41 % (重量法)和37 % (电导法); 根系土壤的微生物数量明显增加, 其中细菌、放线菌和真菌分别较对照增加了2.3倍、4.3倍和71倍, 与对照相比均为显著性差异。根系微生物的耐盐性结果显示, 随着土壤盐分的降低, 根系微生物生长的最适盐度也随之降低, 耐盐性较低的微生物种群已逐渐成为优势种群。系统发育分析表明, 枯草杆菌属成为植物修复后土壤中的优势种群。

**关键词** [滨海盐渍土](#); [盐地碱蓬](#); [生物修复](#); [微生物区系](#)

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## The effects of *Suaeda salsa* L. planting on the soil microflora in coastal saline soil

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**Abstract** Bioremediation, a rising environmental biotechnology, increasingly plays an important role in controlling the pollution in soil, surface water and ground water. It has many merits such as low cost, good cleanup effect and no secondary pollution compared with the traditional physical and chemical remediation techniques. Cultivating with saline-enduring and saline-avoiding plants can effectively improve saline soil. The improvement effects ought to be studied not only on the physical and chemical properties but also on the biological characters. Bioremediation of coastal saline soil was carried out by planting halophyte *Suaeda salsa* L in Tianjin estuarine area. The effects on the soil microflora were studied by comparing the content of soluble salt, the microbial amount and the transition of dominant microflora in soil. The results showed that the content of soluble salt in *S. salsa* planted soil decreased by 41% (method of weight) and 37% (method of electric conductivity) compared with that of control respectively. It revealed that the halophyte *S. salsa* was salt-absorbing plant for saline soil. The results also showed that the microbial amounts were increased with the decrease of the soluble salt in the soil around *S. salsa* L. root system. The bacteria, actinomycete and fungi were increased 2.3 times, 4.3 times and 71 times respectively. The salinity for optimal growth of bacteria decreased synchronously with the decrease of salinity in the soil of root system. The bacteria with the lower ability of salt-tolerance have been becoming the dominant flora. The phylogenetic analysis based on the 16S rDNA indicated that the planting of *S. salsa* L also had effects on the sorts of bacteria in soil. *Bacillus* sp. became the dominant flora in saline soil after bioremediation by *S. salsa*. All these results demonstrated the remarkable improvement effect of ecosystem after *S. salsa* planting on coastal saline soil.

**Key words** [coastal saline soil](#); [Suaeda salsa L](#); [bioremediation](#); [microflora](#)

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