Ecological genetics of salinity tolerance in a wild plant.

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Summary

Differences in percent germination, germination rate, and initial growth rate under four salinity conditions were compared among five natural populations (three salt marsh populations and two inland ones) of *Phragimites communis* Trinius (Graminae). Germination rate was higher in salt marsh populations than inland ones under low NaCl concentrations, although no difference was found under high NaCl concentrations. On the other hand, final germination rate was not different among populations through any salinity levels. Initial growth rate is higher in salt marsh populations than inland ones in high salinity levels, but is the same under low salinity conditions. These facts suggest that salinity tolerance in *P. communis* is controlled not only by phenotypic plasticity but also genetically in part.

We also examined allozyme diversity among these five populations. Genetic differentiations between salt marsh populations and inland ones were not higher than among salt marsh populations or between inland ones. This fact suggests that gene flow extensively occurs between salt marsh and inland populations, and that genetic control for salinity tolerance is maintained by natural selection in salt marsh populations of *P. communis*.