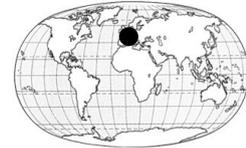


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NO EVIDENCE FOR LOCAL ADAPTATION IN AN INVASIVE PLANT

The role of evolutionary adjustments to the new environment is an emerging focus in invasion biology in recent years. Interspecific hybridization may enhance the ability of adaptive evolution because it leads to increased genetic variation and novel genotypes. *Mahonia aquifolium* Pursh. (Nutt.) (Berberidaceae) is a shrub native in North America and invasive in Central Europe. Since its introduction for ornamental reasons in 1822, *M. aquifolium* was crossed by plant breeders with closely related species. Using transplantation experiments in the field and in the greenhouse we tested if invasive *Mahonia* populations differ in their response to habitat conditions and if there is evidence for local genetic adaptation.

We chose five invasive *Mahonia* populations in Germany representing the range of habitats in which *Mahonia* occurs. We germinated seeds from these populations in the greenhouse and transplanted 10 seedlings from each population in each habitat. Survival after the first summer shows no significant population x habitat interaction. In a second experiment in the greenhouse, we planted seedlings from each of the five populations in each soil, and cultivated them at two watering levels. After four months, plant biomass showed a significant population x watering interaction but no population x soil interaction. To analyze genetic variation within populations, we planted offspring of four seed families from each of three populations in the same five soils as above. There was a significant seed family effect but no seed family x soil interaction.

Our results do not provide any evidence for local adaptation of these populations. In previous experiments, however, we found high genetic variation of several traits within invasive *Mahonia* populations. We suggest that this variation is caused by hybridization and that there has not been sufficient time for local adaptation since the start of the invasion in Central Europe.

keywords: local adaptation, *Mahonia*, invasive plant