

Nitrogen limitation promotes the competitive strength of invasive plants in temperate grasslands

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Understanding the mechanisms underlying the competitive interactions between native and invasive plant species is crucial for effective ecosystem management, especially under the many challenging scenarios posed by global changes. In temperate grasslands, where these dynamics play a pivotal role in biodiversity conservation, the role of nutrient ratios vs nutrient amounts in shaping competitive outcomes remains a key question. Through a series of pot experiments, this study investigates the impact of N:P ratios as well as of different N:P amounts on the competition between common native and invasive plants in temperate grasslands. By manipulating levels of nitrogen limitation (different N:P ratios) under high and low nutrient amounts, we assessed the relative importance of N:P ratios in influencing interactions between native and invasive plants. We examined nutrient effects on plant growth and functional traits associated to resource-use strategies. Our findings show that nutrient ratios exert a stronger influence on competitive outcomes than nutrient amounts. Specifically, native plants compete more strongly with invasive species under conditions of balanced N:P ratios. In turn, imbalanced ratios that exacerbate nitrogen limitation, favor invasive species over natives. Our results highlight the importance of considering nutrient stoichiometry in predicting and managing plant invasions in temperate grasslands. These insights can inform the development of conservation strategies aiming at mitigating the impacts of invasive species and protecting native biodiversity in grassland ecosystems.

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Online [https://tum-conf-zoom-x.de/j/69079483987?pwd=eIJ6bStBbXo0RHQ4aUJjVG1qRVpLdz09](https://tum-conf.zoom-x.de/j/69079483987?pwd=eIJ6bStBbXo0RHQ4aUJjVG1qRVpLdz09)

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