

Accumulated soil seed bank of the invasive sand dropseed (*Sporobolus cryptandrus*) poses a challenge for its suppression.

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Abstract

Global warming, elevated atmospheric CO₂ concentrations, and increased likeliness of extreme drought and wildfires in many regions will likely favour C4 grass species. We explored the effect of the encroachment of an invasive perennial C4 grass, *Sporobolus cryptandrus* on the composition of soil seed banks in dry sand grasslands in Central Europe. In five mass-locality sites of the species we assessed the composition and vertical segmentation of the soil seed bank in twelve 1-m² plots along an increasing cover of the invasive species. We found that the seed bank diversity and density decrease with the increasing sampling depth; the decrease of density is affected by the increasing *Sporobolus* cover. Neither the diversity nor the seed bank density of other species were affected by increasing *Sporobolus* cover but, affected by the sampling site. Most of the studied seed bank characteristics were affected by the sampling depth, but none of them were affected by the increasing cover of *Sporobolus*. Increasing cover of *Sporobolus* in the vegetation was associated with an increasing proportion of *Sporobolus* seeds in the seed bank, and we found viable seeds of the species in the soil even in plots with no *Sporobolus* cover. Given that a decrease in the precipitation of the summer months and an increase in the frequency of droughts is projected in this region, we expect that the accumulated massive seed bank of *Sporobolus* will facilitate the further rapid spread of the species.

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