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Seedling recruitment in steppe communities

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Key words : seedling ; density ; seasonal dynamics ; vegetative recruitment ; steppe communities

Introduction Seedlings are central to population maintenance, community structure and succession. The conditions of seedling growth can play an important role in local-scale species richness and productivity (Zeiter et al., 2006). Relatively few studies have addressed seedling-recruitment in semiarid grassland ecosystems of Inner Mongolia. The dynamics of seedling recruitment after different types of disturbance is unclear for many species in this region. The aim of the present study was to evaluate the seasonal dynamics of seedlings in typical steppe communities.

Materials and methods Three perennial graminoid species from the steppe community of Inner Mongolia were selected for population and seedling studies. The experimental site was located in an area of flat terrain in the southern part of Duolun County, Inner Mongolia. Treatment included mowing and grazing. This experiment was started in Mid-May, and extended to early October. To facilitate seedling monitoring, eight 25cm 25cm quadrates were sampled in each of 5 replicated subplots.

Result and discussions Seedling densities of all species showed an increasing trend during the growth period. Seasonal seedling dynamics of *S. krylovii* was similar to that of the Gramineae, which account for majority of the seedlings.

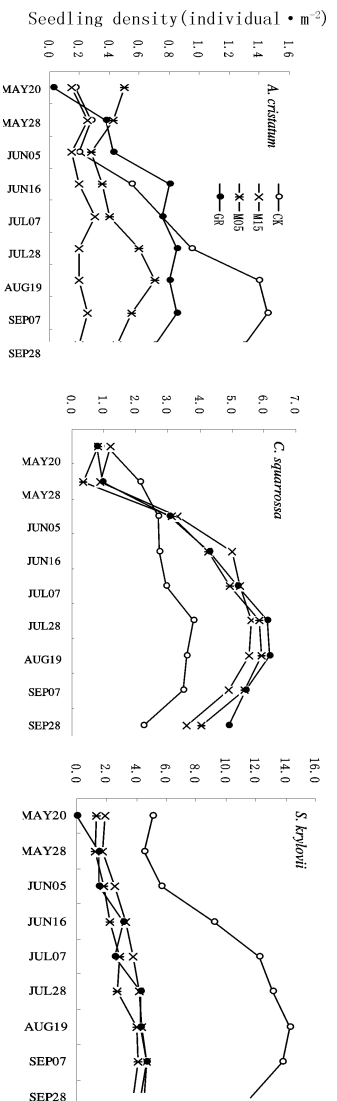


Figure 3 Seasonal dynamics of seedling density.

In a comparison of all three species, the pattern of relative seedling density was $S. krylovii > C. squarrosa > A. cristatum$ ($P < 0.05$) under control conditions, but under both grazing and mowing treatments the rank order was $C. squarrosa > S. krylovii > A. cristatum$ ($P < 0.05$). Mowing disturbance results in a reduction of reproductive parts, especially for late-flowering plants. This land use practice, therefore, can induce seed limitations for a species normally producing a sufficient amount of seeds (Overbeck et al., 2003). The species in this experiment, however, all had later reproductive phenology. The tall-growing species- *S. krylovii* lost a larger proportion of biomass than the smaller plants when mowed.

Conclusions From the standpoint of seedling density, *S. krylovii* accounted for the majority of all seedlings present in the study plots. It's trend of seedling recruitment, however, was similar to that of the other species. In this typical steppe community, seedlings, especially of the dominant species, played a vital role in population recruitment.

References

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