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Effects of intensified freeze-thaw frequency on dynamics of winter nitrogen resources in temperate grasslands

Chaoxue Zhang et al.

Correspondence to: Linna Ma (maln@ibcas.ac.cn)

Table S1 Dominant traits of selected species in the meadow and sandy steppes.

Grassland type	Plant species	Functional type	Rooting Depth & Architecture	Green-up (root activity)	Susceptibility
Meadow steppe	*Stipa baicalensis* (Dominant species)	Perennial bunch grass	Deep, dense, and fibrous roots (can exceed 20 cm depth)	Early spring	Cold-tolerant Drought-tolerant
	Leymus chinensis	Perennial rhizome grass	Shallow rhizomatous roots (mainly in top 20 cm)	Mid-spring	Cold-tolerant Drought-tolerant
	Carex pediformis	Perennial forb	Fine, shallow, and fibrous roots (concentrated in top 10 cm)	Mid-spring	Susceptible to environmental disturbances
Sandy steppe	*Cleistogenes squarrosa*	Perennial bunch grass	Shallow fibrous roots (concentrated in top 20 cm)	Mid-spring	Cold-tolerant Drought-tolerant
	Klasea centauroides	Perennial forb	Intermediate-deep root system (can extend beyond 20 cm)	Late spring	Susceptible to environmental disturbances
	Corethrodendron fruticosum (Dominant species)	Semi-shrub	Deep root system and (exceed 20 cm depth)	Mid-spring	Cold-tolerant Drought-tolerant

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