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## Adaptation Benefit Two Grass Coexisting in Meadow Steppe of Northeast China

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## Adaptation benefit two grass coexisting in meadow steppe of northeast China

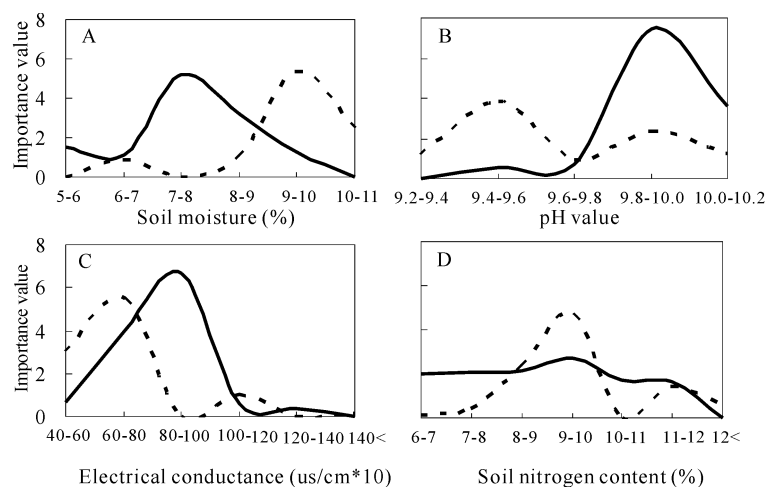
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**Key words :** adaptation, coexisting, meadow steppe, soil property

**Introduction** *Leymus chinensis* and *Phragmites communis* are dominant and sub-dominant species in meadow steppe of Northeast China. They often co-dominate in natural meadow steppe. Important values of both species were used to examine the adaptation of *L. chinensis* and *P. communis* to soil properties and explain their co-existing.

**Materials and methods** Vegetation characteristics and soil properties were investigated and determined for six pure stands of *L. chinensis* and *P. communis* respectively, and five mixed stands for both species during two growing season. Important value was calculated from height, coverage, biomass and density. Soil properties involving soil moisture, pH value, electrical conductance and nitrogen content were determined.



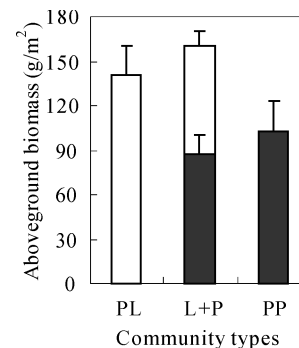
**Figure 2** Different responses of *Leymus chinensis* (—) and *Phragmites communis* (---) to the change of soil properties.

**Results** Plants in the mixed stands of *L. chinensis* and *P. communis* showed a tendency of having higher aboveground biomass than those in pure stand of *L. chinensis* and *P. communis* (Figure 1;  $P=0.088$ ). The important value differed largely in soil moisture, pH value, electrical conductance and nitrogen content for both species (Figure 2A-D). *L. chinensis* preferred growing in habitats with lower soil moisture, and higher concentration of salt and alkali in soil, but higher soil moisture and nitrogen concentration, low salt concentration favored by *P. communis* (Ba et al., 2006).

**Conclusion** *L. chinensis* showed a tolerance to drought, and salt and alkali stress. While *P. communis* adapted to environment with rich soil water and nutrient. Differentiation in niches of soil properties provided the possibility for both species coexisting in the natural meadow steppe of Northeast China (Silvertown, 2004).

### Reference

- Silvertown, J., (2004). Plant height and the niche. *Trends in Ecology & Evolution* 18(11): 605-611.
- Ba, L., Wang, D. L., Hodgkinson, K. C., et al. (2006). Competitive relationships between two contrasting but coexisting grasses, *Leymus chinensis* and *Phragmites communis*. *Plant Ecology* 183(1): 19-26.



**Figure 1** Production of mixed communities (L + P) is often greater than those of pure *Leymus chinensis* stands (PL) and *Phragmites communis* stands (PP).