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Plant Regeneration through Somatic Embryogenesis of *Leymus chinensis* Trin.

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Objectives

Chinese leymus (*Leymus chinensis* Trin.) is a perennial grass widely distributed at high pH sodic and arid soil throughout northern China and Mongolia. Due to its high vegetative productivity, protein content, nourishment to cattle, this species is cultivated as a major grass forage production. However, severe production loss due to desertification needs its new variety with enhanced tolerance to environmental stress by molecular breeding. In order to understand its high adaptability to harsh environmental conditions on the basis of molecular biology and to develop its transgenic plants with enhanced tolerance to environmental stress, an efficient regeneration system is required. In this study, we have tried to establish an efficient regeneration system through somatic embryogenesis of *L. chinensis*.

Materials and Methods

1. Material

Seeds of *Leymus chinensis* Trin. were collected from the An Da, Heilongjiang Privince of China (2003)

2. Methods:

- Callus induction medium: MS salt, 1.5 mg/L 2,4-D, 30 g/L sucrose and 4 g/L gelrite
- Somatic embryogenesis medium: MS salt, 1.0 mg/L 2,4-D, 30 g/L sucrose and 4 g/L gelrite
- Plant regeneration medium: MS salt, 0.5 mg/L NAA, 2.0 mg/L kinetin, 30 g/L sucrose and 4 g/L gelrite

Results and Discussion

An efficient regeneration system was established through somatic embryogenesis of mature seeds. The calli were efficiently induced (about 70%) from mature seeds on MS medium supplemented with 1.5 mg/L 2,4-D. Somatic embryos were formed from the surface of embryogenic callus on MS medium supplemented with 2 mg/L kinetin and 0.5 mg/L NAA after 3 weeks of culture. Roots were induced from the shoot when transferred to MS medium without plant growth regulator for 1 week. Plant regeneration rate was 36% and regenerated plantlets were grown to normal mature plants in pot. An efficient plant regeneration system in this study will be useful for molecular breeding of *Leymus chinensis* with enhanced tolerance to environmental stress.

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