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Callus induction and plant regeneration of *Poa pratensis* 'Nasu' seeds carried by China recoverable satellite Shijian-8

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Key words: *Poa pratensis*, space mutation, callus induction, plant regeneration

Introduction The research of space mutation breeding in landscape plants (especially grasses) was less than that of the grains and vegetables. Most of that research focused on characteristics such as germination rate, and leaf number, tiller number, leaf width, and plant height (Han Lei *et al.*, 2004). This paper covers a new way to research seeds from recoverable satellite, which may produce more useful germplasm resources for *Poa pratensis* breeding.

Materials and methods The *Poa pratensis* 'Nasu' seeds from China recoverable satellite Shijian-8 were surface sterilized in 2% NaClO solution with a drop of Tween-40 for 5 min after tap water washing and 70% ethanol treatment for 30 s. The seeds were then rinsed with sterile distilled water for 5 times. The culture media used in this study are MS (Murashige and Skoog, 1962), N₆ and MSN. MSN medium contains the microcomponent of N₆ and other components of MS. Different concentrations of 2,4-D (1.0 ~ 3.0 mg l⁻¹) and BA (0.1 ~ 0.5 mg l⁻¹) were included in the medium for callus induction and plant regeneration.

Results After 15 days from the time *Poa pratensis* 'Nasu' seeds were incubated on medium, callus was induced (Figure 1, A). MSN medium was more appropriate for callus induction than the other media. 2.0 mg · L⁻¹ 2,4-D and 0.2 mg · L⁻¹ BA was the best combination for callus induction. For callus redifferentiation, the concentration of 2,4-D must be reduced. Best callus redifferentiation frequency was obtained on MS medium with 0.2 mg · L⁻¹ 2,4-D and 2.0 mg · L⁻¹ BA. On MS medium, leaves and roots were developed from the callus after 50 days (Figure 1, B). Then the regenerated plantlets about 3 cm long were transferred to MS/2 medium to gain more roots. Whole plantlets with 4.0 cm leaves and developed roots (Figure 1, C) were removed from the medium. The regenerated plants were grown in a healthy environment and transplanted to the soil (Figure 1, D).

Conclusions The best medium for callus induction from *Poa pratensis* 'Nasu' seeds which had been recovered from China recoverable satellite Shijian-8, was MSN supplemented with 2.0 mg · L⁻¹ 2,4-D and 0.2 mg · L⁻¹ BA. The best medium for callus redifferentiation was MSN supplemented with 0.2 mg · L⁻¹ 2,4-D and 2.0 mg · L⁻¹ BA. Complete plantlets with healthy roots were obtained on MS medium supplemented without hormones.

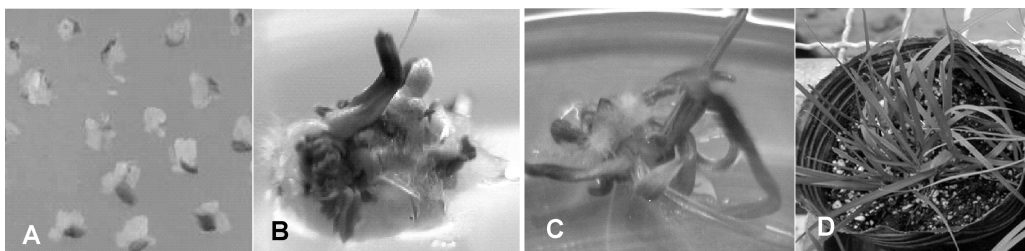


Figure 1 Callus induction and plant regeneration of *Poa pratensis* 'Nasu' seeds from China recoverable satellite Shijian-8 (A) Callus of seeds. (B) Callus redifferentiation. (C) Whole plantlets (D) Regenerated plantlets.

Reference

Han Lei, Sun Zhenyuan, Qian Yongqiang, Peng Zhenhua. Changes in biological characteristics of *Poa pratensis* carried by Shenzhou-3 spaceship. *Pratacultural Science*, 2004 (5): 17-19.