

生化他感作用与高寒草甸上人工草场自然退化现象研究

I. 细叶亚菊 (*Ajania tenuifolia*) 入侵程度与垂穗披碱草 (*Elymus nutans*) 人工草场退化速度的相关性调查

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STUDIES ON THE ALLELOPATHY IN THE NATURAL DEGENERATED PROCESS OF MAN-MADE GRASSLAND ON ALPINE MEADOW: I.

CORRELATION BETWEEN THE DEGENERATION SPEED OF ARTIFICIAL *ELYMUS NUTANS* GRASSLAND AND THE INVASION *AJANIA TENUIFOLIA*

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ABSTRACT

The investigation of natural degeneration of artificial *Elymus nutans* grassland on Haibei Alpine Meadow was carried out on May 23—June 29, 1986. The results are as follows:

1. The developmental pinnacle of artificial *Elymus nutans* grassland generally appears in the their year after planting and then gets into the degeneration phase. If there is no invasion of *Ajania tenuifolia*, the developmental pinnacle appearance can last for more than three years, in the sixth year. At that time, the speed of degeneration is not very fast. Even in the 9th year, the number and biomass (d. w.) of artificial *Elymus nutans* grassland still amounted to 55.89% and 32.48% of the highest pinnacle production.

2. The invasion of *Ajania tenuifolia* is one of the most important influential factors to make the artificial grassland degenerating more severe. Comparing the plot which is not invaded by *Ajania tenuifolia* with the invaded plot of the same artificial *Elymus nutans* grassland, the number and biomass (d. w.) of *Elymus nutans* were reduced by 35.2% and 37.91% respectively in the third year, and by 87.5% and 89.6% respectively in the 9th year.

3. If we make the number and biomass (d. w.) of *Elymus nutans* at the developmental pinnacle of the artificial *Elymus nutans* grassland which is not invaded by *Ajania tenuifolia* to be a standard to analyse the 9th year's date, we can find that during the three years, the effect of *Ajania tenuifolia* invading increase the speed of degenerated process of the artificial *Elymus nutans* grassland by 1.1 time on number and 0.4 times on biomass (d.w.).

4. Comparing the plots invaded and not invaded on the same artificial *Elymus nutans* grasslands, it was found that there is a correlation of number and biomass between *Elymus nutans* and *Ajania tenuifolia*. At the end of May, 1g increase of *Ajania tenuifolia* biomass (d. w.) should reduce 12—24 individuals of plant and 0.48—0.49 g of biomass (d. w.) of *Elymus nutans*.