

三裂叶豚草种子萌发特性无明显纬度格局

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摘要:【目的】随全球气候变化, 入侵植物快速适应机制是生物入侵研究领域重要科学问题之一。植物种子对不同气候的适应生理生态反应对于外来入侵建立种群至关重要。三裂叶豚草(*Ambrosia trifida* L.) 近年来显现出明显的由北向南扩散趋势, 为了探究其种子生理生态学是否发生对高温环境的适应性变化。

【方法】本研究由北向南(由高纬度向低纬度)分别选取吉林长春、辽宁沈阳、四川自贡和贵州贵阳三裂叶豚草种群, 以与沈阳纬度相近的新疆伊犁三裂叶豚草种群为对照, 测定各种群百粒重、营养成分含量、最适萌发温度、其萌发过程中激素变化, 探讨种子萌发特性对纬度变化的响应。【结果】研究表明, 5个区域三裂叶豚草果实的百粒重大小、营养成分含量、萌发过程中各激素含量和不同温度下的萌发率均无明显纬度格局变化规律。三裂叶豚草不同种群间粗淀粉、半纤维素和脱落酸3个指标差异不显著, 而百粒重、粗蛋白、粗脂肪、纤维素、木质素、赤霉素和细胞分裂素7个指标具有显著差异($P < 0.05$)。【结论】研究表明, 三裂叶豚草种子萌发特性没有明显的纬度格局, 可能是表型可塑性促进了其在我国不同地理环境中的定殖, 这对评估三裂叶豚草扩散潜能、建立早期监测预警等防控措施具有一定意义。

关键词: 植物入侵; 三裂叶豚草; 纬度格局; 种子萌发; 激素

There was no obvious latitude pattern in seed germination characteristics

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Abstract: 【Objective】 With the global climate change, the rapid adaptation mechanism of invasive plants is one of the important scientific issues in the field of biological invasion research. The physiological and ecological response of plant seeds to different climates is very important for the establishment of alien populations. In recent years, *Ambrosia trifida* L. has shown an obvious trend of spreading from north to south. In order to investigate whether its seed physiology and ecology have changed to adapt to high temperature environment. 【Method】 In this study, from north to south (from high latitude to low latitude), *Ambrosia trifida* L. populations were selected from Changchun in Jilin, Shenyang in Liaoning, Zigong in Sichuan and Guiyang in Guizhou, respectively, and compared with the Yili in Xinjiang *Ambrosia trifida* L. population, which was similar in latitude to Shenyang, the hundred-grain weight, nutrient content, optimal germination temperature and hormone changes during germination were measured. To investigate the response of seed germination characteristics to latitude variation. 【Result】 The results showed that there were no obvious latitude pattern changes in the fruit size, nutrient content, the contents of various hormones during germination and germination rate at different temperatures in five regions. There were no significant differences in crude starch, hemicellulose and abolic acid among different *Ambrosia trifida* L.

populations, but there were significant differences in a hundred grain weight, crude protein, crude fat, cellulose, lignin, gibberellin and cytokinin among different populations ($P < 0.05$). **【Conclusion】** The results showed that there was no obvious latitude pattern in the seed germination characteristics of *Ambrosia trifida* L. Phenotypic plasticity may have promoted its colonization in different geographical environments in China, which has certain significance for evaluating the diffusion potential of *Ambrosia trifida* L. and establishing early monitoring and warning measures.

Key Words: Plant invasion; *Ambrosia trifida* L.; Latitude; Seed germination; Hormone