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# 不同培养条件下差巴嘎蒿种子萌发与幼苗生长特征

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## Germination and seedling growth of *Artemisia halodendron* under different incubation environments.

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摘要

差巴嘎蒿是科尔沁沙地流动、半流动沙丘的主要物种之一.本试验设置室内自然条件培养、培养箱中恒温全光(24 h光照)培养、恒温光暗交替(12 h光照)培养和恒温全暗 (0 h 光照)培养4种处理,研究不同温度和光照对差巴嘎蒿种子萌发及幼苗生长的影响.结果表明: 室内自然光照和温度条件下差巴嘎蒿种子的萌发率(66.6%)和萌发指数(19.1%)均明显低于恒温箱培养,恒温箱的3个处理中,全暗条件下的种子发芽率(70.2%)低于全光(73.4%)和光暗交替(73.4%)培养,但差异不显著,全光条件下的萌发指数为28.2%,显著低于全暗(31.4%)和光暗交替(30.8%)培养;光照条件对幼苗生长的影响明显,在种子萌发过程中,胚根的生长出现全光促进、全暗抑制的现象,胚芽长度为全暗(2.81 cm)和光暗交替(1.51 cm)条件下高于全光(1.21 cm)培养和实验室自然条件(1.27 cm)培养.环境温度可能是限制差巴嘎蒿种子萌发的主要因素,而光照是影响差巴嘎蒿幼苗生长发育的重要因子.

关键词: 种子萌发 萌发率 发芽指数 胚根生长 胚芽生长 差巴嘎蒿

Abstract:

*Artemisia halodendron* is a dominant species in mobile and semi-mobile dunes of Horqin Sand Land. To investigate the germination character and seedling growth under different temperature and light conditions, the germination rate, germination index and growth of radicle and plumule were measured after treatments in laboratory and heating cabinet incubations. In the laboratory the light and temperature were near to nature condition, while in the heating cabinet it was kept at 25 ℃ with varying durations of light supply, including 24-, 12- and 0-hour light per day. Germination rate (66.6%) and germination index (19.1%) under laboratory condition were both significantly lower than in the heating cabinet ($P<0.05$). In the heating cabinet, the germination rate under 0-hour- light was 70.2%, which was insignificantly lower ($P>0.05$) than under 12- and 24- hour light conditions (both 73.4%), and the germination index under 24-hour light was 28.2%, which was significantly ($P<0.05$) lower than under 0- and 12- hour light conditions (31.3% and 30.8%, respectively). Radicle and plumule growth responded to light more readily than the seed germination rate and germination index during the process of germination, and the radicle growth was inhibited by darkness while promoted by light, and the plumule lengths under 0- and 12- hour light conditions were 2.81 cm and 1.51 cm, respectively, significantly higher than under 24-hour light (1.21 cm) and natural condition (1.27 cm). It was concluded that temperature was a main factor in seed germination, and seedling growth was mainly influenced by light regime.

Key words: seed germination germination rate germination index radicle growth plumule growth *Artemisia halodendron*.



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没有本文参考文献

[1] 王小雪1,2,孙海菁1**,刘芸2,陈益泰1,冯大兰3,李沙4. 浓硫酸处理对海滨木槿10个家系种子萌发的影响[J]. 应用生态学报, 2912, 23(11): 2968-2974.

[2] 闫兴富1**,仇智虎2,张嫱1,张靠稳1,周云锋1. 种皮和播种深度对辽东栎种子萌发和幼苗早期生长的影响[J]. 应用生态学报, 2014, 25(1): 53-60.

[3] 张海艳** . 模拟酸雨对不同类型玉米种子萌发和幼苗生长的影响[J]. 应用生态学报, 2013, 24(6): 1621-1626.

[4] 蔡喜悦1,2,3,陈晓德1,2,3**,李朝政1,2,3,刘成1,2,3. 干旱胁迫下外源钙对石灰岩地区复羽叶栾树种子萌发的影响 [J]. 应用生态学报, 2013, 24(5): 1341-1346.

[5] 张敏1,2,3, 朱教君1,2**, 闫巧玲1,2,3 . 光质对东北次生林生态系统主要树种种子萌发的影响[J]. 应用生态学报, 2012, 23(10): 2625-2631.

[6] 闫兴富,王建礼,周立彪. 光照对辽东栎种子萌发和幼苗生长的影响[J]. 应用生态学报, 2011, 22(07): 1682-1688.
[7] 黄 蔚,陈开宁,柏 祥. 基质氮磷含量对菹草生长与繁殖的影响[J]. 应用生态学报, 2010, 21(11): 2865-2870.
[8] 杨凤军[1, 2];李天来[1];臧忠婧[3];宿越[1];鲁少尉[1]. 不同基因型番茄种子萌发期的耐盐性[J]. 应用生态学报, 2009, 20(07): 1691-1697 .
[9] 胡晓辉[1];王素平[2];曲斌[1]. NaCl胁迫下亚精胺对番茄种子萌发及幼苗抗氧化系统的影响[J]. 应用生态学报, 2009, 20(02): 446-450 .
[10] 张颖娟[1,2];王玉山[2];李青丰[1]. 西鄂尔多斯珍稀濒危植物长叶红砂种子萌发特征[J]. 应用生态学报, 2008, 19(12): 2572-2576 .
[11] 王俊[1,2];王卓晗[1,2];杨龙[1,2];任海[1]. 浇水频率和凋落物覆盖量对黧蒴锥种子萌发及幼苗存活的影响[J]. 应用生态学报, 2008, 19(10): 2097-2102 .
[12] 闫巧玲[1,2];刘志民[1];李雪华[1];马君玲[1,2]. 埋藏对65种半干旱草地植物种子萌发特性的影响[J]. 应用生态学报, 2007, 18(04): 777-782 .
[13] 苌伟[1,2];吴建国[2];刘艳红[1]. 荒漠木本植物种子萌发研究进展[J]. 应用生态学报, 2007, 18(02): 436-444 .
[14] 闫兴富[1,2];曹敏[1]. 不同光照对望天树种子萌发和幼苗早期生长的影响[J]. 应用生态学报, 2007, 18(01): 23-29 .
[15] 蔺菲[1,2];郝占庆[1];叶吉[1];姜萍[1]. 长白山暗针叶林苔藓植物对三种针叶树种子萌发及幼苗生长的影响[J]. 应用生态学报, 2006, 17(08): 1398-1402 .