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Promoting seedling stress resistance through nursery techniques in China

Y. Liu · S. L. Bai · Y. Zhu · G. L. Li · P. Jiang

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Abstract Plantation forestry is one of the most important approaches to restoring forest cover in China. Of the remaining sites suitable for afforestation in China, 52 % are considered harsh and only 13 % considered good, which indicates that successfully establishing a plantation in the future will become more and more difficult. Seedling quality in terms of morphology, physiology, and viability is a critical aspect for successful plantation establishment. Due to a large area in need of afforestation, and because of its diverse harsh sites, many studies have focused on nursery techniques of promoting seedling stress resistance, including inoculating ectomycorrhizal fungi, applying plant growth regulators, use of fall fertilization, induced water stresses, or a combined use of these methods. Most of relevant results of this research have been published in Chinese, and are unknown to researchers from other countries. Moreover, no comprehensive review of stress resistance research in forest tree seedlings in China has been completed. Therefore, this review intends to provide a concise synthesis of literature related to plant manipulation techniques that offer seedling stress resistance in Chinese nurseries, discuss potential shortcomings of these studies, and define priorities for future seedling stress resistance research. With this paper we hope to enhance communication about nursery and plantation seedling culture among researchers from China and other countries.

Keywords Forest tree seedling · Stress resistance · Nursery technique · Chinese forestry

Introduction

Plantation forestry is one of the most important approaches to restoring forest cover in China. Significant advances have been achieved after more than 60 years of great effort.

Y. Liu · Y. Zhu · G. L. Li (✉) · P. Jiang
Key Laboratory for Silviculture and Conservation, Ministry of Education,
Beijing Forestry University, Beijing 100083, China
e-mail: glli226@163.com

S. L. Bai
College of Forestry, Inner Mongolia Agricultural University, Hohhot 010019, China