

INFLUENCE OF AMERICAN VERSUS CHINESE CHESTNUT GENOME PROPORTION ON SOMATIC EMBRYOGENESIS INDUCTION

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Somatic embryogenesis (SE) has been successfully applied for clonal propagation of American chestnut trees, including transgenic trees engineered with genes potentially conferring resistance to chestnut blight. It may also be useful for clonally propagating blight-resistant trees produced by a hybrid backcross breeding program, in which American trees are hybridized with blight-resistant Chinese chestnut trees, followed by backcrossing to American trees. However, to date there have been no reports of SE in either Chinese chestnut or hybrid backcross material. We tested the effects that Chinese chestnut genome proportion and pollination type (control versus open pollination) have on the success of SE induction using a standard protocol for culturing American chestnut. None of the material that had been control-pollinated produced embryogenic cultures. Hybrids, which had 50% Chinese chestnut genome, were also unsuccessful. Open-pollinated American chestnut and open-pollinated hybrid backcross B3F3 trees (approximately 15/16 American and 1/16 Chinese) successfully produced embryogenic tissue from the SE induction. The first B3F3 somatic embryos are now in production, offering the potential to clonally propagate elite advanced generation hybrid backcross trees for restoration, as well as for timber and nut production.