A CLONAL PROPAGATION AND CRYOPRESERVATION SYSTEM FOR ATHANTIC WHITE CEDAR (*CHAMAECYPARIS THYOIDES*) VIA SOMATIC EMBRYOGENESIS

Changho Ahn[1], Ryan Tull[1], Paul M. Montello[1], and Scott A. Merkle[1]

Atlantic white cedar (AWC; *Chamaecyparis thyoides*) populations in the eastern U.S. have suffered dramatic declines due to over-harvesting, fire suppression, hydrologic alteration, and conversion of coastal bogs to agriculture and development. A clonal mass propagation system for the species could aid greatly with germplasm conservation and restoration efforts. With the goal of generating embryogenic cultures for the species, developing AWC seeds were collected periodically from the end of June to the end of July, 2014. Seeds were dissected and megagametophyte explants containing pre-cotyledonary embryos were cultured on a modified EM medium with 2,4-dichlorophenoxyacetic acid and 6-benzylaminopurine. While only a few explants produced embryogenic callus, we believe this was due to the fact that filled seed percentages were very low. Embryogenic tissues have been maintained and proliferated for more than 9 months on semi-solid medium. For long-term germplasm storage, we cryopreserved the embryogenic tissues using a standard protocol, and embryogenic tissues re-grew following 3 months of frozen storage. Basal medium type, abscisic acid (ABA) and activated charcoal were tested at different levels for their effects on somatic embryo development and maturation. EM medium with 2 g/L AC produced the highest number of mature embryos. Cotyledonary stage somatic embryos produced from these experiments and transferred to a modified EM germination medium without plant growth regulators germinated and have continued growth. We are also testing the effect of light quality on AWC somatic embryo germination and conversion, comparing the effects of LEDs of different wavelengths to fluorescent lights. This is first report describing an *in vitro* propagation and cryopreservation system for Atlantic white cedar via somatic embryogenesis.

[1] Warnell School of Forestry and Natural Resources, University of Georgia, Athens, GA