ADVENTITIOUS SHOOT REGENERATION AND ROOTING OF *FRAXINUS AMERICANA*

Kaitlin J. Palla and Paula M. Pijut

Purdue University (KJP), Department of Forestry and Natural Resources,
Hardwood Tree Improvement and Regeneration Center (HTIRC),
715 West State St., West Lafayette, IN 47907;
and U.S. Forest Service (PMP),
Northern Research Station, HTIRC,
715 West State St.,West Lafayette, IN 47907.
KJP is corresponding author;
to contact, e-mail at kpalla@purdue.edu.

White ash (*Fraxinus americana*) trees provide both ecological and economic benefits. Loss of this North American endemic would disturb the environment. The urban ash tree industry in the United States would also suffer, as would manufacturers of baseball bats, furniture, and cabinets. The emerald ash borer (EAB) is an invasive species that is fatal to a tree once the borer infests it. There are no known means of complete eradication or evidence of any innate resistance in *F. americana*. The threat from this pest becomes more urgent with each growing season, making the development of an in-vitro plant regeneration and transformation system a valuable goal. As a first step toward this objective, a protocol for adventitious shoot regeneration and rooting was developed from freshly isolated hypocotyls obtained from mature embryos of white ash. The best regeneration medium for hypocotyls was Murashige and Skoog (MS) medium supplemented with 13.3 µM 6-benzylaminopurine (BA) plus 4.5 µM thidiazuron (TDZ). Sixty-four percent of hypocotyl segments produced adventitious shoots, with a mean of 3.5 adventitious shoots induced per explant. Adventitious shoots from hypocotyls were established as proliferating shoot cultures following transfer to MS medium with Gamborg B5 vitamins (MSB5) supplemented with 10 µM BA plus 10 µM TDZ. For in-vitro rooting trials, woody plant medium with indole-3-acetic acid (IAA) [2.9, 5.7, or 8.6 µM] plus 4.9 µM indole-3-butyric acid (IBA) were tested under 10-day dark treatment followed by culture in the light. Early results show successful (77.1 percent) rooting of in-vitro shoots on medium containing 4.9 µM IBA plus 5.7 µM IAA. Rooted plants were successfully acclimatized to the culture room. This regeneration system from hypocotyls provides a foundation for *Agrobacterium*-mediated genetic transformation of white ash for resistance to the EAB.