

**AUXIN-PRODUCING ENDOPHYTE INOCULATION IMPROVES EARLY HEIGHT
GROWTH OF SELECTED HYBRID POPLAR HARDWOOD CUTTINGS IN A
MICHIGAN FIELD TRIAL.**

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A group of diazotrophic microorganisms (endophytes) has been shown to produce auxins in culture and to stimulate root and shoot development in *P. trichocarpa* and *P. deltoides* hybrid cuttings in greenhouse trials. Here we inoculated dormant, hardwood cuttings of three diverse poplar taxa with an auxin-producing endophyte, planted them in a field trial in Upper Michigan, and compared their vigor and height growth with uninoculated cuttings for 55 days. A *Populus alba* X *P. grandidentata* hybrid did not root and all but one of the 120 cuttings died. Similar sets of *P. deltoides* (DD) hybrids and a *P. deltoides* X *P. nigra* hybrid (DN) survived and grew well. The DN hybrid grew 48% taller than the DD hybrids, demonstrating inter-species hybrid vigor. Inoculated cuttings of both DD and DN hybrids grew 14% taller than uninoculated cuttings of each taxa during the 55 days of this trial. If endophyte inoculation translates into long-term yield improvement, this would significantly improve the finances of poplar short rotation production systems. Increase yields without the addition of chemical fertilizers would also benefit the energy balance of poplar crop production.

KEYWORDS: Poplar, endophytes, growth, rooting, auxins

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