Micropropagation of *Stewartia pseudocamellia*

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Nature of Work: *Stewartia pseudocamellia* Maxim. (Japanese stewartia) is a small tree which is highly prized as a landscape plant because of its showy flowers, exfoliating bark, and attractive fall color. Unfortunately, the species is not widely utilized as an ornamental due, in part, to propagation difficulties both by seed and stem cuttings. Therefore, two experiments were conducted to investigate the feasibility of propagating *S. pseudocamellia* by micropropagation (tissue culture).

In the first experiment, single-node explants were excised from shoots of actively growing stock plants on three dates which represented specific stock plant growth stages. Following surface sterilization, explants were placed on agar-solidified Woody Plant Medium (WPM) (1) containing either no growth regulators or *N*-(3-methyl-2-butenyl)-1*H*-purin-6-amine (2iP) at 5.0 or 10.0 ppm (24.6 or 48.2 μM) or 0.025 or 0.05 ppm (0.11 or 0.23 μM) *N*-phenyl-*N*-1,2,3-thiadiazol-5-ylurea (TDZ).

In the second experiment, the three distal axillary nodes of each shoot were excised at 4-day intervals for 28 days beginning 52 days after stock plants were potted following cold storage at 7°C (44°F). Explants were surface sterilized and placed on WPM supplemented with 10 ppm (49.2 μM) 2iP either alone or in combination with 3 ppm (8.6 μM) gibberellic acid (GA_3).

Results and Discussion: The first experiment revealed that the most frequent budbreak occurred for explants placed on media containing 2iP at either concentration. Explants cultured at the softwood stage had less contamination and greater budbreak than explants taken from more mature stem tissue.

In the second experiment neither GA_3 or node position influenced budbreak frequency or shoot elongation. Days after potting (stock plant growth stage) influenced frequency of budbreak and shoot elongation with the optimal period for explant collection being 56 to 72 days after stock plants were potted. Elongated shoots (one microcutting per explant) were produced on both media. Microcuttings ≥ 10 mm (0.4 in) were rooted using ex vitro procedures and acclimatized to greenhouse conditions.

Significance to Industry: Results indicate that *S. pseudocamellia* is amenable to micropropagation. However, before the aforementioned protocol can be applicable in a commercial situation, in vitro axillary shoot proliferation must be increased.

Literature Cited

1. Lloyd, G. and B. McCown. 1980. Commercially feasible micropropagation of mountain laurel, *Kalmia latifolia*, by use of shoot tip culture. Proc. Intl. Plant Prop. Soc. 30:421-437.