HortScience 27(1):81. 1992.

Micropropagation of Red and Black Chokeberry (*Aronia* spp.)

Mark H. Brand and William G. Cullina[1]
Department of Plant Science, The University of Connecticut, Stows, CT 06269-4067

Additional index words. *Aronia arbutifolia, A. melanocarpa,* microcutting, shoot proliferation, tissue culture

Aronia arbutifolia (L.) Pers. (red chokeberry) and *A. melanocarpa* (Michx.) Elliot (black chokeberry) are native shrubs with white spring flowers; dark, glossy, green foliage; red fall color; abundant fruit; pest resistance; and easy culture. Improved forms of *Aronia,* such as *A. arbutifolia* 'Brilliantissima', must be propagated vegetatively to maintain phenotype. Although *Aronia* spp. can be rooted from cuttings, propagation of new selections could be achieved more rapidly *using* micropropagation methods. We have determined that commercial multiplication of improved forms of *Aronia* by micropropagation is feasible.

Shoot-tip explants, 2 to 3 cm long, were collected from actively growing, mature-phase tissue of a selection of *A. melanocarpa* and from *A. arbutifolia* 'Brilliantissima'. Explants were prepared and surface sterilized as described by Brand and Lineberger (1986). Shoot tips were then placed on MS medium (Murashige and Skoog, 1962) (pH 5.7 before autoclaving) containing 3% sucrose, 0.65% agar (Sigma, St. Louis), and 4.4 µM *N* -(phenyl-methyl)-1 *H* -purine-6-amine (BA). Explants were subcultured three times at 4-week intervals before being used for in vitro production of shoots.

All cultures were grown initially in 25 × 150-mm culture tubes sealed with clear polypropylene caps and in 140-ml jars sealed with B-caps (Magenta Corp., Chicago) for the last subculture. The tubes contained 15 ml of medium and the jars 30 ml. The environment for all experiments was 24C ± 2C and 16 h of cool-white fluorescent light (40 $\mu mol \cdot m^{-2} \cdot s^{-1}$).

Shoot proliferation was evaluated on MS medium and WP medium (Lloyd and McCown, 1980) (pH 5.2 before autoclaving) containing 3% sucrose, 0.65% Sigma agar, and 0.0, 0.4, 2.2, 4.4, or 11.1 µM BA. Single shoots, 25 mm in length, were placed vertically in culture tubes on each combination of components. Shoot proliferation was evaluated after 8 weeks of growth.

For rooting experiments, all microcuttings were harvested from cultures grown for 16 weeks on MS medium that contained 4.4 µM BA. For in vitro rooting, 25-mm-long microcuttings were individually placed on 15 ml of half-strength MS medium that contained 4.9 µM indole-3-butyric acid in 25 × 150-mm culture tubes. Microcuttings rooted under nonsterile conditions were planted in a moistened 3 milled sphagnum moss : 1 fine perlite (v/v) mix in 20 × 15 × 8-cm clear plastic trays at a density of 40 microcuttings per tray. Rooting was evaluated after 6 weeks. Rooted microcuttings were acclimated to greenhouse and outdoor conditions by gradually increasing light and reducing humidity (Brand and Lineberger, 1986).

Both *Aronia* spp. initiated shoot proliferating cultures easily from actively growing shoot tips. The most shoots that could be used as microcuttings (8.8 and 5.6 for *A. arbutifolia* 'Brilliantissima' and *A. melanocarpa,* respectively) were produced on MS or WP medium containing 4.4 or 2.2 µM BA. Microcutting leaf expansion was enhanced on MS medium.

Microcuttings of both *Aronia* spp. rooted readily, even on basal medium. Rooting percentages for *A. arbutifolia* 'Brilliantissima' were 87% and 96% (in vitro and nonsterile conditions, respectively) and 83% and 95% for *A. melanocarpa.*

Rooted microcuttings were easily acclimated to greenhouse and then to outdoor conditions. More than 400 micropropagated *A. melanocarpa* plants were grown in 4.25-liter containers; 3 months after rooting, most plants were 30 cm tall, had five to seven main branches, and were phenotypically identical to the original plant.

Received for publication 26 Apr. 1991. Accepted for publication 15 Aug. 1991. Journal Paper no. 1368 of the Storrs Agricultural Experiment Station. The cost of publishing this paper was defrayed in part by the payment of page charges. Under postal regulations, this paper therefore must be hereby marked *advertisement* solely to indicate this fact.

[1]Undergraduate Student.

Literature Cited

Brand, M.H. and R.D. Lineberger. 1986. In vitro propagation of *Halesia carolina* L. and the influence of explantation timing on initial shoot proliferation. Plant Cell Tissue Organ Culture 7:103-113.

Lloyd, G. and B. McCown. 1980. Commercially feasible micropropagation of mountain laurel, *Kalmia latifolia,* by use of shoot tip culture. Combined Proc. Intl, Plant Prop. Soc. 30:421-426,

Murashige, T. and F. Skoog. 1962. A revised medium for rapid growth and bioassays with tobacco tissue cultures. Physiol. Plant. 15:474-419.

Downloaded from https://prime-pdf-watermark.prime-prod.pubfactory.com/ at 2025-09-01 via free access