

POT TEST OF FABRICS FOR CONSTRAINING TREE ROOTS

by J. Alan Wagar¹

Tough fabrics may provide an economical way to protect sidewalks from tree roots. In a limited test, effects of *Eucalyptus globulus* roots were examined for 20 fabrics. These included window screen, panty hose, and felt, knit, and woven "geotextiles" of polypropylene, nylon, and polyester. Twenty-nine seedlings (2 each for 9 materials, 1 each for 11 others) were planted in peat and perlite in 1-gallon pots, with each seedling placed above a slanting fabric sample. Seedlings were watered regularly but not fertilized and were placed in a small patio surrounded by a building that blocked direct sunlight most of the year.

Roots were inspected after 22 to 23 months. By then seedlings were 1.2 to 7.5 feet tall (ave. = 5 feet) with caliper of 0.3 to 1.2 inches (ave. = 0.62 inch). Because only eucalyptus was tested and had few roots larger than 0.25 inch in diameter, conclusions and extrapolations to other species, larger trees, and longer periods must be tentative. But sufficient patterns emerged to provide guidelines for further trials.

Fabrics did inhibit the growth of roots. Unyielding material with mesh sizes greater than approximately 0.03 inch constricted roots. When strands between openings were thin, roots tended to overgrow and embed them but were nevertheless stunted (fig. 1). Larger strands or greater amounts of fiber between openings were not overgrown (fig. 2).

Tough materials with small openings deflected roots. Roots appeared unaffected by elastic material from nylon panty hose, and roots penetrating polypropylene felts stretched the small openings before being constricted by the combined strength of displaced fibers.

Additional information is expected from a full-scale study with 36 London planes (*Platanus acerifolia*) and 36 poplars (*Populus candicans*) being field grown with barriers of polypropylene felt and woven polypropylene.



Figure 1. Roots tended to overgrow and embed thin strands of fabric but were nevertheless stunted.



Figure 2. Roots did not overgrow strands that were thick relative to openings.

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