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ROOT SYSTEM CHARACTERISTICS OF THREE WOODY SPECIES PLANTED ON STEEP SOIL-DENUDED SLOPES

Petros Ganatsas, Marianthi Tsakaldimi*

Aristotle University of Thessaloniki, School of Forestry and Natural Environment, P.O. Box 262, 54124, Thessaloniki, Greece

Abstract

This paper aims to investigate the root characteristics of three woody species *(Pinus brutia, Quercus coccifera* and *Spartium junceum*) planted on steep soil-denuded slopes, surfaced after ring-road excavation. The planted slopes were almost vertical, south faced and adding no soil. Fifteen plants per species were manually extracted for root system analysis and testing. The findings showed that the survivorship was different among the investigated species with *S. junceum* plants to survive better. The studied species follow different patterns of root development which in all cases were strongly affected by the adverse site conditions. The taproots, in all cases, got tapered and shortened rapidly in the length of the digging hole's depth, while the density of lateral roots increased, especially in the case of *S. junceum*. Root tensile breaking force differed among the species and it was found to correlate with root diameter. The resistance force from the cracks resulted in a deformation of embedded roots (flat-shaped roots instead of circular). The specific adaptation, which enables the plants to persist in such adverse environments, seems to be the number of embedded roots which were constant among the three studied species. However, based on the overall species performance, *S. junceum* appeared to be the best adaptable for eco-engineering purposes.

Key words: highways restoration, root deformation, root tensile resistance

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*Author to whom all correspondence should be addressed: e-mail: marian@for.auth.gr; Phone: ++302310992325