

Size and Density of Resin Canals are not Factors Preventing Pathogen Activities in *Pinus densiflora* Cultivars Resistant to Pine Wilt

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It is indicated that a mechanism for resistance to pine wilt disease may be the suppression of the pine wood nematode (*Bursaphelenchus xylophilus*; PWN) migration. We investigated whether density and size of resin canals can be the factors preventing the migration of PWN. We measured cross and tangential sections of three resistant and two susceptible (none selected) cultivars of *Pinus densiflora*. There was no indication that resistant cultivars have less or smaller vertical and horizontal resin canals in xylem than susceptible cultivars. These results suggest that low density and small size of resin canals in xylem are not the significant factors preventing PWN migration. In addition, we found that each resistant cultivar has distinct characteristics in its resin canal structures. This result suggests the possibility that the factors contributing to resistance may vary among resistant cultivars. For example, Soja-(d)-39, one of the strongest resistant cultivars of *Pinus densiflora*, had large total crosscut area of vertical resin canals in xylem. Soja-(d)-39 also has the largest total crosscut area of vertical resin canals in cortex among sample cultivars. However, it is not clear how these characteristics contribute to the suppression of PWN activities in Soja-(d)-39 stems. Further investigation of the relationship between resin canal structure and inhibition of PWN migration is needed.

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