

# Accumulation of Mn in Leaves of *Rosmarinus officinalis* Cultivated in Substrates of Pine Bark

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*Rosmarinus officinalis* is an important aromatic shrub cultivated for medicinal, culinary, and ornamental uses. To assess growth, the contents of trace metals cadmium (Cd), copper (Cu), iron (Fe), manganese (Mn), lead (Pb), and zinc (Zn) and macronutrients calcium (Ca), magnesium (Mg), potassium (K), nitrogen (N), and phosphorus (P) were measured in these plants cultivated on two substrates: pine bark (PB, pH 4.0, 80.5% organic matter) and pruning wastes-biosolids (BS, pH 6.9, 47.5% organic matter). These plants, initially of  $3.5 \pm 0.5$  g dry weight and  $31.1 \pm 6.9$  cm, were maintained under greenhouse conditions for 7 months. Nutrient solution samples were taken from each substrate in situ by rhizon probes, indicating that the concentrations of soluble Mn and Zn in PB were significantly greater than in the nutritive solution BS. At the end of the assay, the dry weight of leaves and height was significantly greater in plants cultivated in BS ( $40.0 \pm 2.2$  g and  $75.9 \pm 14.3$  cm) than in PB (27