Differential Aluminum Sensitivity Among Plant Species. (C02-moyer092320-Oral)

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Abstract:

Populations of soybean and loblolly pine were grown in hydroponics units in a growth chamber. An 8-h photoperiod supplied by a combination of high-pressure sodium and halogen lights, and the aerial temperature of 24C were chamber controlled. Grown in complete nutrient solution maintained at pH 4.3 +/- 0.2 and a temperature of 25C, seedlings were exposed to Al+3 concentrations spanning from 0-400 uM. In the lower concentration ranges, soybean root growth was inhibited 50% at 15 uM Al+3. Pine root growth was not inhibited, but slightly stimulated at Al+3 concentrations up to 30 uM. ICP analysis of internal Al levels in root tissue 0-5 mm from the apex showed that soybean and pine accumulated similar amounts of Al in their root tips when exposed to these levels. In concentrations up to 400 uM Al+3, soybean root growth was severely inhibited. Pine root growth remained greater than the control plants even at 400 uM Al+3. Pine internal Al accumulation appeared to saturate at about 100 uM Al+3.

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