

## SOIL SALINITY TOLERANCE OF AZALEAS AND CAMELLIAS

Because azaleas and camellias tolerate relatively little salt in the soil they may be injured in locations subject to coastal flooding or high ocean winds, or when irrigated with brackish water or grown on heavily fertilized soil, U. S. Department of Agriculture scientists report.

Salt levels above 1,800 parts per million in the soil solution killed azalea and camellia plants grown in experiments conducted cooperatively by USDA's Agricultural Research Service and the Virginia Truck Experiment Station at Norfolk.

In contrast, corn tolerates salt levels of 4,000 ppm and cotton 6,500 ppm. Sea water contains about 35,000 ppm of salt.

In the experiments, two-year-old Hinodegiri azaleas, and Victor Emmanuel and Mathotiana camellias received four one-inch irrigations during a five-week period. Soil scientists Jesse Lunin of ARS and F. B. Stewart of the Virginia station used water containing 640, 1,280, 2,560, and 3,840 ppm of salt. A control group of plants received demineralized water only.

By April 1, only a week after the last saline irrigation, azaleas receiving the highest concentration of salt showed browning of tips on almost all leaves. Older leaves dried and dropped off. The next to highest salt concentration caused tipburn on 25 to 50 percent of the leaves, but no defoliation.

Visible symptoms on the camellias were less severe. At the highest salt concentration, older leaves had tipburn within a week and soon dried and dropped, but only an occasional young leaf was affected. Mathotiana showed more injury than Victor Emmanuel.

All of the azaleas and camellias that received the highest salt concentrations were dead by May 1 -- five weeks after the treatment was applied. Plants that received the next to highest salt concentration showed severe injury then and were dead two weeks later.

Conditions which build up salinity beyond the maximum of 1,800 ppm of salt in the soil solution tolerated by azaleas and camellias are likely to occur in eastern and Gulf Coast areas where these plants grow best. The scientists recommend that salinity tests be made of such soils to determine whether salt should be leached out to prevent damage to the plants.

Injury from excessive soluble salts is a common occurrence in azalea plantings in North Carolina. In several cases, leaf burn on greenhouse forcing azaleas has been attributed to high soluble salts.

In running greenhouse soil analyses, the Soil Testing Division, N. C. Department of Agriculture in Raleigh, reports soluble salts in mhos. To help relate these readings to parts per million (ppm) the following comparisons were made. Measurements are based on sodium chloride concentrations.

25 mhos	-	150 ppm
50 mhos	-	600 ppm
75 mhos	-	1050 ppm
100 mhos	-	1500 ppm
125 mhos	-	1950 ppm
150 mhos	-	2400 ppm
175 mhos	-	2850 ppm
200 mhos	-	3300 ppm

Readings of 100 mhos or more are definitely in the danger zone for azaleas. Frequent soil tests may warn you before trouble develops. Your local County Agricultural Agent will provide you with sample boxes and directions for sending samples to the Soil Testing Division in Raleigh for this free soil testing service.

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