

POTASSIUM CHLORIDE INJECTION THROUGH SPRINKLERS

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ABSTRACT

A trial was set up in 1984 to question the practice and belief that potassium applied with water and held in the water film is more available to tree roots than other methods of application and therefore potassium applied through sprinklers is a desirable way of maintaining good potassium status. Analysis of treated water indicates a potential chloride ion toxicity in the treated water. The total salt hazard is not believed to be a problem at this time. Initial post treatment tissue analysis indicates no improvement in K levels between treatments. Some trees showed chloride excess as a result of the 21 lb/tree KCl application.

OBJECTIVE

Question the practice and belief that potassium applied with water and held in the water film is more available to tree roots and therefore the application of potassium through sprinkler systems is a desirable way of monitoring good potassium status in the tree.

PROCEDURE

A trial was established to compare different application methods of dry potassium: 1) Jan. '84, 1000 pounds/acre potassium sulfate drilled in every 3-4 years; 2) Jan. '84, 1000 pounds/acre potassium chloride drilled in every 3-4 years; 3) Each September starting in '84, 400 pounds/acre potassium chloride banded annually; 4) 400 pounds/acre potassium chloride injected through sprinkler system during each growing season, starting in '84; 5) untreated check.

The injection of KCl is accomplished with four irrigations during the growing season, each irrigation receiving 100 lbs. of KCl. Dry KCl is being dissolved in water for the injection. Liquid KCl was considered but was found to be too expensive.

Leaf analysis and visual symptoms will be the initial measurements taken to reveal any benefits from the various application methods.

RESULTS

Water analysis revealed that in the non-KCl injected water the EC was .20 millimhos/cm; the ppm CL was .98; and the ppm K was 1.3. In the treated water the EC was .98 millimhos/cm; the ppm CL was 198; the ppm K was 237. The ppm chloride in the treated water is extremely high and potentially toxic; the total EC was fairly low and no total salt problems are anticipated. Pretreatment leaf potassium levels averaged .8% K with summer samples. 1984 first-year post-treatment leaf potassium levels were similar to 1983 levels, indicating no K improvement in any treatment. On an average, toxic chloride levels were not detected in any treatment. However, some individual trees treated with KCl had .5 ppm CL in July tissue samples.

CONCLUSIONS

No conclusions can be made as yet. It is anticipated that it will take five years to see if there are any differences in treatments.