

COMPARISON OF EFFICIENCY OF POTASSIUM APPLICATION METHODS TO WALNUTS

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ABSTRACT

A trial was set up in 1987 on a sandy loam soil in a potassium deficient walnut orchard to compare the efficiency of various methods of applying potassium. On this sandy loam soil both the annual applications of 400 lbs./A/Y of KCL and the single application of 1600 lbs/A every 4 years corrected deficiency after two years. After eight years of treatments the two annually banded treatments have the highest K levels and the "mass dose" application and the untreated check has deficient K levels. After omitting treatments in 1994 all KCL treatments have CL levels below .3 ppm.

OBJECTIVE

To evaluate the efficiency of three methods of applying potassium.

PROCEDURE

Evaluate the following treatments applied with a Ranchero Spreader: 1) 400 lbs/A KCL banded annually on 2 sides of tree; 2)400 lbs/A KCL annually out center of spreader in row center making a wide band-one pass/row center; 3) 1600 lbs/A banded once every 4 years on 2 sides of tree; 4) Untreated check.

RESULTS

Leaf analysis results are summarized in Fig. 1 and 2. All treatments, including the untreated showed adequate leaf K levels after two years. After three years the check trees were again K deficient. After 4 years the K treatment levels were lower than in 1990 but still adequate; the check dropped to a more deficient level. In 1992 K levels reaches their lowest levels in all 4 treatments but responded to treatments in 1993 and '94. The untreated check is experiencing very low K levels. Chloride was elevated to high levels particularly in the mass dose treatment, but declined after omitting treatments in the winter of 1994.

CONCLUSION

The annual, as well as the mass dose application, provided excellent correction of K deficiency the second year after application and in most subsequent years. Maintaining good K status on an annual basis is cost effective and should be preferred by growers rather than spending a large sum of money every 4 or 5 years on a mass application and then perhaps creating a chloride toxicity problem with the mass application. Of particular interest is the wide band applied in one pass per tree row center. This method of application, which worked well on this soil, cuts equipment time and labor in half providing additional savings.

FIG 1. PERCENT LEAF POTASSIUM LEVEL.

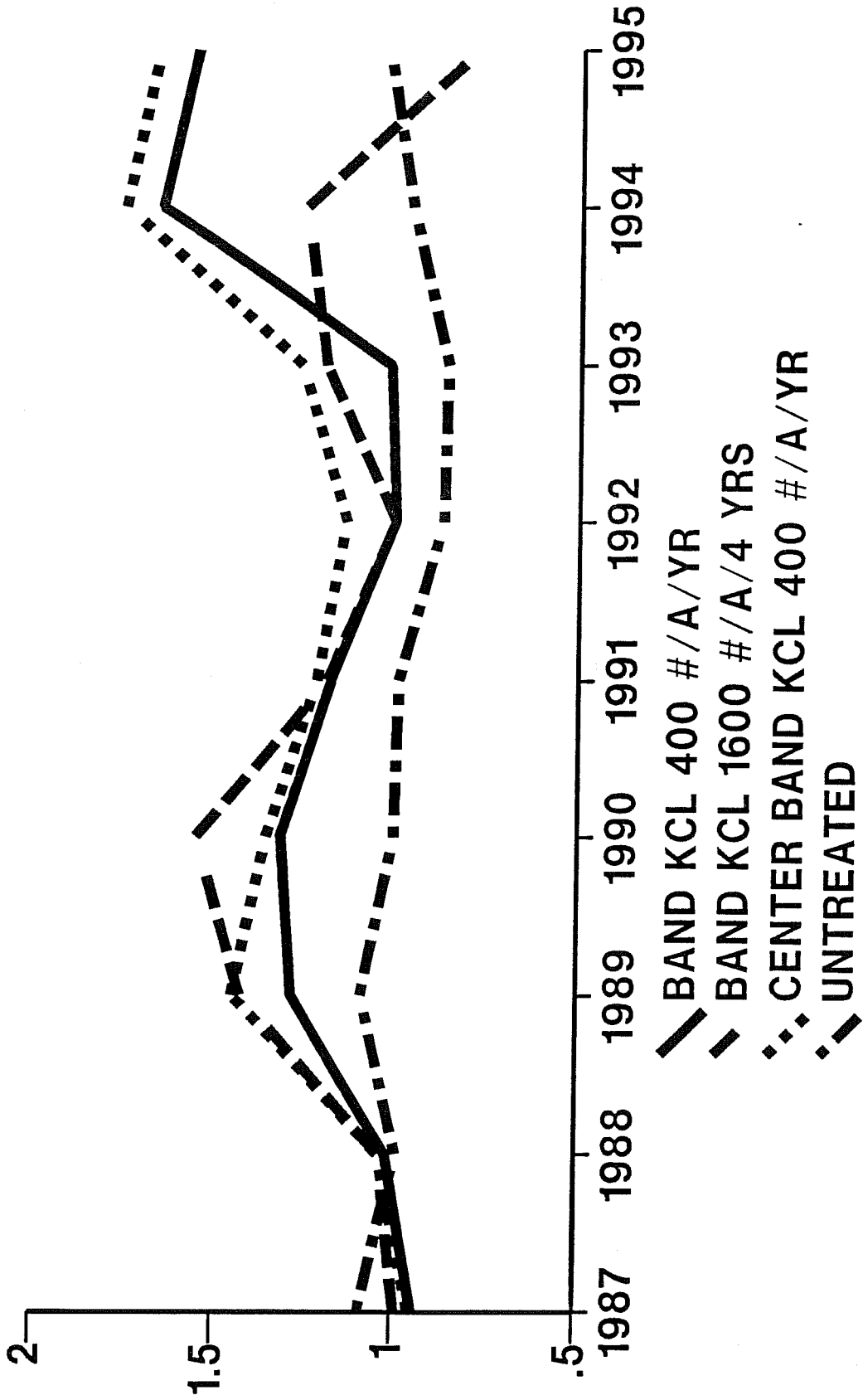


FIG 2. PERCENT LEAF CHLORIDE LEVEL.

