VERIFICATION OF FIELD NITROGEN TIMING TRIAL RESULTS - 1984

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ABSTRACT

Water, soil and tissue samples collected this year and analyzed reveal that prune plots established in Butte, Glenn, Tulare and Sutter counties differ tremendously in respect to soil type and nitrogen content in the water. In this trial, prunes are grown on soil ranging from Clay Loam, to Loam, to Sandy Loam. Total nitrogen in the irrigation water from these plots indicates that from none to 58 pounds of nitrogen per acre is added to the orchard with two acre feet of irrigation. Leaf samples, used to determine when the non-fertilized plots become deficient, have not been analyzed yet except in two orchards. In both of these cases there is no significant difference in leaf nitrogen content in fertilized and non-fertilized plots after one growing season.

OBJECTIVES

To evaluate, through leaf analysis, how long it takes for mature prune orchards to become deficient in nitrogen. This information will be used to see if the information gathered in the original nitrogen time trial is typical of prune orchards throughout the state and would, therefore, apply to prune orchards throughout the state.

PROCEDURES

So far, seven prune orchards have been selected for this study--two in Butte County, two in Tulare County, two in Sutter County and one in Glenn County. Next year an orchard from the Sutter/Yuba area and Tehama County are anticipated to be added to the trial.

In the seven orchards, two plots have been established comparing continued annual nitrogen fertilization and discontinued nitrogen fertilization. Water samples have been collected from each orchard for analysis, soil samples collected from each plot for analysis, and leaf samples collected from each tree in each plot for analysis.

In Glenn and Tulare counties, one grower fertilized over the non-fertilized area. These plots will begin again next season.

RESULTS

Water analysis: In one Butte County orchard, considerable nitrogen is being supplied in the well irrigation water. With 10.3 ppm total nitrogen in the water, 56 pounds of nitrogen would be provided per acre with two acre feet of irrigation in the orchard.

The other Butte County orchard irrigated with canal water was virtually free of nitrogen.

In Tulare County, one orchard had 3.4 ppm N in the water, providing 18 lbs. of N per acre with two acre feet of irrigation. The other Tulare County orchard water sample was free of nitrogen.

The Glenn County orchard water sample was essentially free of nitrogen.

In one Sutter Orchard, the total N in the water was 3.2 ppm, in the other it was 1.4 ppm.

Soil analysis: One Butte County orchard soil was determined to be a Sandy Loam soil and 10 ppm nitrate N and 3 ppm ammonium N present in the treated and untreated areas.

The other Butte County orchard soil was determined to be a Clay Loam soil with 3 ppm nitrate N and 2 ppm ammonium N in the treated and untreated areas.

The soil analyses from the Tulare orchards have not been completed as yet.

The Glenn County orchard is a Loam soil with 4 ppm nitrate N in the non-fertilized area, 6.3 ppm nitrate N in the fertilized area, 2.8 ppm ammonium N in the non-fertilized area, and 2.0 ppm ammonium N in the fertilized area.

In the two Sutter orchards, the nitrate and ammonium nitrogen content was similar in the treated and untreated areas.

Leaf analysis: The only leaf samples returned are those from Tulare County. These analyses reveal that there is no significant difference in leaf nitrogen content in the treated and non-treated areas in either orchard.

CONCLUSION

After only one growing season, no conclusion can be drawn as to when non-fertilized prune trees will be depleted of nitrogen. Samples collected so far indicate that (1) we are sampling orchards on a wide range of soils, (2) some orchards are receiving significant amounts of nitrogen in their irrigation water, (3) it takes more than one growing season to deplete the available nitrogen from the trees.