**WHEAT/SORGHUM ROTATION** AS AN **ALTERNATIVE TO PREPLANT METHYL BROMIDE FUMIGATION** FOR MANAGING **CRICONEMELLA XENOPLAX** ON PEACH.

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The peach industry in the southeastern United States continues to be plagued by the disease complex known as Peach Tree Short Life (PTSL). Tree loss averages 3-5% annually in Georgia and South Carolina. In South Carolina alone, this disease complex was responsible for killing 1.5 million trees between 1980-1990, costing growers over $6 million per year in lost production. The primary biological pest that is responsible for making peach trees more susceptible to PTSL is the ring nematode, Criconemella xenoplax. Over the years, researchers have determined that tree life can be prolonged if growers follow a 10-Point Program, which includes chemical control of the ring nematode. Methyl bromide is still recommended in the Southeast as a preplant nematicide treatment for the ring nematode. However, with the expected cancellation of methyl bromide by the year 2001, preplant nematode management alternatives need to be identified and made available to our peach growers.

In 1986, investigations into nonchemical crop management strategies for the ring nematode were initiated at Byron, Georgia. This was a cooperative effort between the USDA-ARS and University of Georgia. Results from a 3-year field experiment and additional greenhouse studies indicated that the wheat cultivar 'Stacy' suppresses reproduction of the ring nematode.

Two questions that resulted from this initial experiment were 1) what crops could be rotated with wheat, but still suppress the nematode and 2) how many years would a peach grower need to rotate the land before replanting it back to peaches? In Georgia, two crops that could be rotated *with* wheat were soybeans and sorghum. Results from greenhouse studies indicated that all tested soybean cultivars (Kirby, Wright, Coker 6738, Hutton, Braxton, Coker 368, DP-417, and Cobb; all having root-knot nematode resistance) were suitable hosts for ring nematode, whereas several sorghum cultivars tested suppressed nematode reproduction. Sorghum cultivar NK-2660 was chosen for further field testing.

In 1990, a second field experiment was initiated on a field site in Fort Valley, Georgia with a known history of PTSL. The objective of this experiment was to evaluate one, two, & three year wheat/sorghum and wheat/fallow rotations as a nonchemical preplant nematode management strategy for ring nematode prior *to* replanting the land back to peach. Results from this 3-year study (1990-1993) indicate that one, two, and three year wheat/sorghum or wheat/fallow rotations all suppressed ($P \leq 0.05$) the ring nematode population as compared to continuous peach. One year wheat/sorghum suppressed ring nematode population density greater ($P \leq 0.05$) than one year wheat/fallow. No differences in nematode suppression were detected among the one, two, or three year wheat/sorghum rotations.

Rotation with Stacy wheat and NK-2660 sorghum has potential as a nonchemical preplant management system for ring nematode in peach orchards in the Southeast,.