

Race 4 Fusarium Field Evaluations of Chemical and Cultural Controls to Reduce Inoculum Survival

R.B. Hutmacher, Extension Specialist, Univ. CA Davis Plant Sci. Dept. and UC Shafter and West Side REC, e-mail: r.hutmacher@ucdavis.edu; Steve Wright, Farm Advisor, Univ. CA Coop. Extension, Tulare and Kings Co.'s; Kearney Research and Extension Center staff; Shafter REC staff; participating chemical companies, participating seed companies

Greenhouse studies have evaluated the impact of metam sodium applications, with and without solarization films and associated soil heating, on development of FOV symptoms in varieties of cotton previously recognized as highly-susceptible (a Pima, Phytogen 810-R or DP-744) or moderately susceptible (an Acala, Phytogen-72). The soil media used was a 1:2 mix of soil from a highly infested field site mixed with steam-treated potting mix. Trays of soil mix received the treatments and post-treatment, the soil was transferred into clean, waxed cardboard containers to plant out the seed for further evaluations of disease symptom development and plant survival percentages. In metam sodium trials, three different rates of metam sodium alone did not significantly impact the survival rate (about 30%) or symptoms (root vascular stain index rating averaging about 3 on a scale of 0 (no symptoms) to 5 (severe symptoms) in highly-susceptible Pima varieties. In the moderately susceptible Acala variety, the metam sodium treatments improved the survival rate and reduced vascular stain ratings when compared with untreated soil. In the first trial, averages of about 90% survival were recorded for treated soil versus about 60% survival for untreated. In the second trial, an average of about 90% survival was recorded for treated soil versus about 70% for untreated.

Soil chemical treatments were also evaluated in microplot studies in field FOV race-4 infested sites. With metam sodium, more susceptible Pima cultivars had higher levels of damage and worse mortality rates than less susceptible cultivars (even at metam rates of 20 to 60 gal/acre). Only the 80 gal/acre rate provided more consistent improvements with more FOV-susceptible cultivars, but the 60 gal/acre rate also improved survival rates consistently with moderately susceptible cultivars. With Topsin M and Ridomil soil in-furrow banded applications, only the higher rate Ridomil drench (3 fl oz rate) and 4 or 6 lb Topsin rate significantly improved seedling survival with more susceptible cultivars, but had less consistent effect with more tolerant cultivars. In addition to soil chemical treatments, approximately 70 seed treatment combinations were evaluated in an infested soil site in Kern County and Fresno County in 2007. These treatments were provided and applied by the following companies in order to represent a broad range of available chemistries: Bayer Crop Science, Syngenta Corporation, Wilbur Ellis, Valent and some others with smaller sets of treatments. The treated seed was planted in replicated, single row plots 15 feet in length in April, 2007. Four sets of plant population counts were done in these trials in May, June, July and August, and in mid-August foliar and root vascular staining evaluations were done. The range of seed treatments tested to date had relatively limited impact on cotton plant survival rates in both susceptible and more-resistant types, with survival rates in the best performing treatments with more susceptible varieties improving from about 10 to 15 percent to in the range of 25 to 35 percent. These field and greenhouse evaluations will largely be completed with the 2008 growing season unless additional new chemical materials are provided for evaluations.

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