Management of Citrus Leafminer in Florida: Could Canker Change the Picture?

By P. A. Stansly, J. M. Conner and J. R. Brushwein

Citrus leafminer (CLM) is the larva of a tiny moth (*Phyllocnistis citrella*) originally from Asia that made its Western Hemisphere debut in lime groves in south Dade County during spring 1993. CLM shocked the citrus world by spreading a wave of destruction throughout the state in less than six months and is now found in most of the world's citrus producing areas. Damage to young foliage can be devastating, but fortunately, overwintering populations are low and generally unable to cause significant damage to the all-important spring flush. Furthermore, populations have been reduced by native predaceous and parasitic insects, aided by successful establishment of the tiny wasp *Ageniaspis citricola*, originally from Thailand (*C&VM* 1996 60(9) pp 8-9). The combined effect of these factors has reduced the risk of economic damage in citrus trees over 4-years-old to negligible proportions. Nevertheless, CLM continues to cause significant damage to young trees and nursery stock in Florida and elsewhere.

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Enter citrus canker caused by the bacteria *Xanthomonas citri* and things become more complicated with CLM. This is because the mine is produced just under the leaf surface, creating tiny cracks in the leaf cuticle, through which bacteria suspended in moisture come into contact with the unprotected epidermis. The bacteria spread throughout the mine, causing numerous lesions (Figure 1, opposite page) increasing the amount of inoculum and, thus, the rate of spread. The result was demonstrated dramatically when the eradication campaign against canker in Saõ Paulo (Brazil) suffered a major setback with arrival of citrus leafminer in 1995.

Figure 2

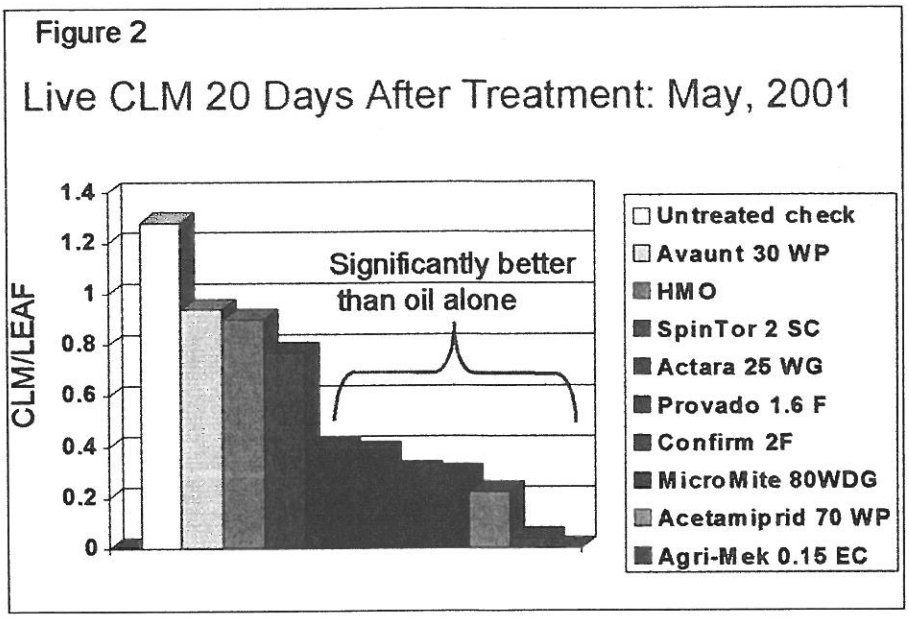

Figure 3

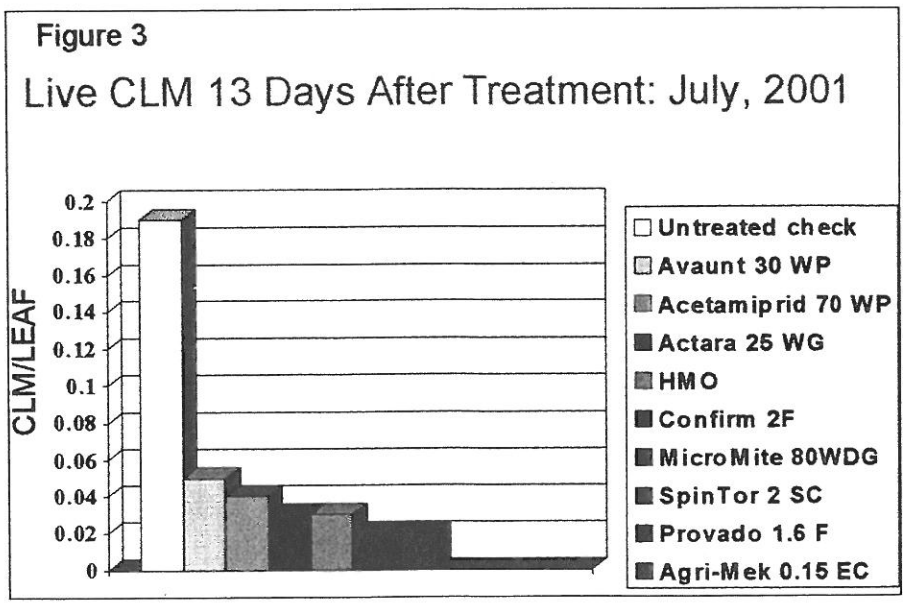

Figure 1.
Canker-infested citrus leaf

Normal canker lesions

Lesions spread by CLM

No one can deny the enormity or economic impact of canker on the Florida citrus industry. A statewide eradication effort against canker has already claimed almost 2 million trees within a 1,500-square-mile quarantine area in South and South Central Florida. The objective in Florida remains eradication, and we are not recommending leafminer control or any other measures to manage canker. Furthermore, leafminer control by foliar sprays only provides short-term suppression because of rapid growth of new and therefore unprotected foliage. Nevertheless, we recently tested a number of standard and new products with the intent of providing more alternatives in the event that circumstances call for insecticidal control.

Two trials, initiated May 3, 2001, and July 3, 2001, were conducted in a bareroot nursery on 2-year-old sweet orange trees. Trees were trimmed 30 days prior to treatment to induce new flush. Plots were 25 feet long, and each treatment, applied with a battery-powered hand sprayer at 145 GPA, was repeated four times. A horticultural mineral oil (HMO) (F435-66) at 3 percent was included with all treatments. Live leafminers were counted in the laboratory on 10 pieces of flush from each plot.

Twenty days after treatment of the first experiment, we could still see a 40-fold difference between the best treatment and the untreated check. Six of the nine treatments gave better results than the HMO alone (Figure 2). Thirteen days after treatment in the second trial, there were significantly fewer leafminers on all treated trees compared to untreated trees. However, no treatment improved control over HMO alone (Figure 3). Of the materials tested, only AgriMek, MicroMite, SpinTor, and HMO are currently labeled for use on citrus in Florida. However, due to label restrictions, risks of pesticide resistance, impact on beneficial organisms, and cost, HMO is the only material that could be used repeatedly if necessary. *CVM*

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