

Psyllid management update: New products, recommendations for 2010

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The Florida Citrus Pest Management Guide (SP-43) is updated annually to provide the most current IFAS recommendations for managing insect, mite, disease and weed pests of citrus. In the 2010 version of the guide, several changes have been made in the section "Asian citrus psyllid and citrus leafminer" (ENY-734) to recommendations for controlling psyllids.

The first and most significant change is the addition of thiamethoxam to the list of products recommended for psyllid control. Thiamethoxam is a neonicotinoid product similar in use to imidacloprid that was registered for use in citrus in mid-2009. Two thiamethoxam products are now available for use in citrus and included in the IFAS recommendations: Platinum 75 SG and Actara 25 WG. Platinum 75 SG is a soil-applied systemic product recommended for use on young trees up to 6 feet in height. Platinum should be applied at a rate of 1.83-3.67 fl. oz. of product per acre depending on size of the trees being treated. The Platinum label limits the use of this product to no more than 3.67 fl. oz. per season or no more than 0.172 lb. a.i./A of any thiamethoxam containing product per season. Thus, depending on the rate used, only one to two applications of this product can be applied to solid plantings of young trees per season.

Actara 25 WG is the thiamethoxam formulation which is applied as a foliar spray at a rate of 4.0-5.5 fl. oz. of product per acre. The Actara label limits the use of this product to no more than 11 fl. oz. of product per season or no more than 0.172 lbs. a.i./A of any thiamethoxam containing product per season. Thus, Actara applications cannot be made to blocks of young trees where the maximum rates of Platinum have been applied as a soil-drench for psyllid control.

Of the two thiamethoxam products, Platinum will be of most value to Florida citrus growers as it provides an additional one to two soil-applied systemic treatments per season for young trees beyond what is currently allowed for imidacloprid (Admire). This will increase the season-long

window of protection of young trees from psyllids. It is important, however, to note that while thiamethoxam and imidacloprid are two different chemicals (active ingredients), they are both neonicotinoid insecticides and have the same mode of action. Thus, they are not products that can be rotated between as part of a resistance management program. If psyllids were to become resistant to imidacloprid, it is likely that they will be resistant to thiamethoxam as well. Since it is now possible (with the use of Platinum) to increase the number of soil-applied systemic neonicotinoid applications to young trees per season, the likelihood of resistance developing to this important group of insecticides is much greater. To help reduce the risk of resistance development, it is recommended that growers make foliar applications with products of different modes of action (organophosphates or pyrethroids) to plantings of young trees between soil applications of imidacloprid or thiamethoxam to ensure psyllids are not being constantly exposed to the same mode of action continuously. If foliar applications of imidacloprid or thiamethoxam are used in mature groves, their use should be kept to a minimum (and perhaps tank mixed with products with other modes of action) to further reduce the chances of insecticide resistance development to these products which are best used for protecting young trees.

Two additional changes have been made in the psyllid recommendations for 2010. The first is a reduction in the recommended use rate of Imidan 70 W (phosmet). This product was previously recommended at a use rate of 1.5 lbs. of product per acre for both psyllid and Diaprepes root weevils. Based on data from IFAS field trials comparing Imidan at 1.0 and 1.5 lbs. per acre, no differences in psyllid control were observed at these two rates. Thus, Imidan is now recommended for psyllid control at the 1.0 lb./A rate. However, if control of adult root weevils is desired with the same application, growers should use the 1.5 lb./A rate.

The final change in the psyllid control recommendations is the removal of

the product Sevin (carbaryl) from the list of products recommended for psyllid control. In multiple field trials over the past two years, carbaryl has provided inconsistent control of psyllids. While carbaryl appears to have some initial knockdown of psyllid populations, the residual effect is very short-lived with psyllids numbers quickly increasing in carbaryl-treated areas following applications using traditional ground sprays. However, results with carbaryl applied using low-volume equipment to control adult psyllid when no new flush is present appear to work much better. It is possible that carbaryl may be recommended again in the future for low-volume application based on the outcome of future field trials.

In addition to the products currently recommended in the pest management guide, new approaches to psyllid control continue being evaluated in IFAS field trials, including low-volume ground and aerial pesticide applications. Currently, neither low-volume application method is included in the IFAS recommendations for psyllid management due to a lack of replicated field trials to support development of specific recommendations. However, very promising results have been obtained in studies conducted thus far, and following a second year of studies, development of specific IFAS recommendations is anticipated. The following is a brief synopsis of the trials with these low-volume application methods that have been conducted thus far.

LOW-VOLUME GROUND APPLICATIONS

Our recent trials on low-volume application technology for psyllid control have focused on optimizing dosages and application protocols. We have investigated whether rates of insecticide products can be reduced when applied by low volume, while still maintaining effective psyllid control. The results have shown that as the rate of insecticide in the low-volume spray mixture is decreased, the efficacy of psyllid control decreases as well. For example, we tested Danitol in a 2 gallon spray volume applied with an LV-8 sprayer at rates of 4, 12, and 16 oz of Danitol

per acre. Although there was some reduction in psyllid populations with the lower 4 and 12 oz. rates tested, overall the 16 oz rate performed best in controlling psyllids.

We have also examined whether low-volume treatments can be made to every other row versus every tree row. In the case of pyrethroid insecticides such as Danitol, we have found that application to every other row can provide effective psyllid control. However, with other groups of insecticides that are commonly used for psyllid control, low-volume application to every other row resulted in a decrease in efficacy. Thus, where rows are bedded as in flatwoods groves and application to every row may not be feasible, use of a pyrethroid insecticide might be the best option if a low-volume ground application is planned. Otherwise, in these grove situations psyllid control may be best achieved using standard airblast sprayers or by plane.

Currently, low-volume application appears to be useful as a supplemental psyllid control tool, but should not be considered a general citrus pest management tool. The most effective insecticides that target psyllid adults, such as pyrethroids and organophosphates, do not have much of an impact on the immature stages of leafminer feeding within leaf mines. So, while an application of Danitol or Mustang using low-volume sprays will control psyllids, these applications

will not provide effective control of citrus leafminer populations. In trials conducted thus far, we have also found that these low-volume sprays for psyllids will not provide mite control. In fact, a low-volume application of a pyrethroid insecticide may actually have the opposite effect of increasing mite populations by wiping out their natural enemies. There are some selective (beneficial friendly) products, such as Delegate, that are effective against both psyllid and leafminer. However, our initial tests have shown that Delegate applied by low volume is not as effective against the citrus leafminer as compared with a standard high-volume airblast spray of Delegate. Overall, we do not yet have enough experimental evidence to suggest that low-volume sprays are as effective as standard airblast sprays against other insect pests of citrus.

LOW-VOLUME AERIAL APPLICATIONS

In addition to low-volume ground sprays, evaluations of low-volume aerial applications have also shown excellent results in terms of controlling psyllids. Most of the work with low-volume aerial applications has focused on the use of Malathion 5 (57 percent malathion product) applied at a rate of 2 pints of product in 1 gallon of water. The reason for using malathion in these evaluations is because it is one of the few active ingredients

currently registered for use in citrus for which there are labels allowing the product to be applied aerially using spray volumes of 1 to 2 gallons per acre. Lorsban (chlorpyrifos) is another product which can be applied aerially in a minimum spray volume of 2 gallons per acre, but low-volume aerial applications of Lorsban have not yet been tested in the field. The benefit to using low-volume aerial applications is to decrease the amount of time needed to treat large acreages. By reducing application time, low-volume aerial applications will help to facilitate coordinated grove spray programs, which is an important approach to effectively managing psyllid populations. While current product options for low-volume aerial applications are very limited, we are working with product registrants to obtain label changes to permit use of more products in this manner.

Current psyllid control recommendations can be found in the 2010 Florida Citrus Pest Management Guide at <http://edis.ifas.ufl.edu/in686>. A list of products currently labeled for use as low-volume applications is available on the UF/IFAS Citrus Greening Extension Web page at <http://www.crec.ifas.ufl.edu/extension/greening/index.htm>.

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