

2026–2029 Florida Citrus Production Guide: Citrus Leafminer¹

Lauren M. Diepenbrock, Xavier Martini, Jawwad Qureshi, and Lukasz Stelinski²

Citrus Leafminer Biology

Citrus leafminer (CLM) adults, *Phyllocnistis citrella*, are tiny moths that hide within the canopy during the day, emerging at dusk and at night to lay eggs individually on young, expanding leaf flushes. The egg first appears as a tiny dew drop, usually alongside the midvein on the underside of the unexpanded leaf. The larva emerges directly into the leaf tissue, feeding and mining first along the midvein, then back and forth as it makes its way to the leaf margin, where pupation occurs.

Leafminer populations decline to their lowest levels during the winter due to cool temperatures and the lack of flush for larval development. Populations build rapidly on the spring flush, although their presence is not apparent until late spring while the amount of new flush decreases. Throughout the ensuing warm season, leafminer populations vary with the flushing cycles, and subsequent flushes are often severely damaged.

The spring and summer period of high leafminer damage coincides with the rainy season, when citrus canker spread is most likely. CLM greatly exacerbates the severity of citrus canker caused by *Xanthomonas citri* subsp. *citri* (see chapter 29 of this guide, "[Citrus Canker](#)"). CLM is not a vector of the disease, although tunnels resulting from its feeding and mining are especially susceptible to infection, and infected tunnels produce many times more inoculum than in the absence of leafminer. Control of leafminer should be optimized where infection by canker is high, especially in young trees and susceptible varieties such as grapefruit and, to a lesser extent, early oranges.

Leafminer Sampling Method

Sampling is important to monitor CLM populations over time and to determine the timing to apply insecticides or pheromone-based disruption treatments. CLM generally exhibits two population peaks following the flush cycle, in spring and in fall, although the exact timing can vary from year to year. Pheromone-baited traps typically capture CLM adults about one month before peak infestation, providing an early indication that helps growers choose the optimal timing for insecticide applications. Because

serpentine larval mines appear on the underside of new leaves only after larvae have already caused damage, action taken at that stage is often too late to be effective.

It is critical to have a sampling method in place to assess CLM populations before mines start to show up in the grove and to implement an effective control. Control methods such as drenching systemic neonicotinoids or diamide insecticides require one to two weeks after application to be translocated into leaf tissue and reduce larval populations. Similarly, pheromone disruption should be deployed when adults mate in the citrus grove, but it has no effect on eggs and larvae already present in the flush.

The best tools for monitoring CLM are delta traps equipped with a sticky liner on the bottom and baited with a lure that emits CLM sex pheromones. The trap should be placed on a branch at shoulder height. When CLM capture begins to increase, this indicates the optimal time to release a pheromone dispenser or to drench trees with systemic insecticides. It is recommended to deploy one trap per 3 to 5 acres. Trap captures are influenced by the pheromone release rate. Therefore, be sure to replace the lure every six to eight weeks to maintain maximum efficacy.

Leafminer Management

Nonbearing Trees

Leafminers are effectively controlled in young trees using systemic insecticides applied to control the Asian citrus psyllid (ACP). Soil applications of neonicotinoids or diamides should be made about two weeks prior to leaf expansion to allow time for the pesticide to move from the roots to the canopy. Applications of neonicotinoids in summer should be timed to avoid rain events within 24 hours, which would cause leaching of the product away from the root zone. The appearance of leafminers in the young flush of these trees is an indication that residual effects have worn off and reappearance of ACP is soon to follow. Foliar applications of products effective against CLM target larvae and, at best, provide no more than three weeks of protection. Therefore, timing is important, and

sprays directed against CLM should be applied when the flush is about halfway extended to kill the maximum number of larvae.

Bearing Trees

Healthy trees with leafminer-damaged leaves are more likely to become sites for new canker infection if disease inoculum is already present nearby. The only products currently available for leafminer control on large trees are for use as foliar sprays. While several products are effective against this pest, achieving good control using foliar sprays is difficult due to the unsynchronized flush typically encountered during summer and fall. However, because leafminers affect only developing leaves, coverage of peripheral leaves in the canopy should be adequate to achieve suppression with foliar pesticides. Foliar sprays are directed against the larvae and should be timed to coincide with the appearance of the first visible leaf mines, which occur immediately following the feather leaf stage, or about 13 days after budbreak. At this time, insecticide

applications will provide protection for most of the leaves in the new flush.

Historically, natural enemies present in Florida respond to leafminer infestations, causing up to 90% mortality of larvae and pupae. These natural enemies include the introduced parasitoid *Ageniaspis citricola*, which has established throughout most of Florida and has been responsible for up to 30% of this mortality, mostly later in the year. Several indigenous species of parasitoids such as *Pnigalio minio* also contribute to leafminer suppression.

Recommended chemical controls can be found in the second booklet of the *Florida Citrus Production Guide*.

AS ALWAYS, READ THE CURRENT LABEL OF ANY PESTICIDE TO BE USED.

Some product labels specify rates per acre, while others specify rates per volume delivered (e.g., per 100 gal). Refer to the label for details on how the product should be mixed for desired targets.

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² Lauren M. Diepenbrock, associate professor, integrated pest management and insect ecology, Department of Entomology and Nematology, UF/IFAS Citrus Research and Education Center, Lake Alfred, FL; Xavier Martini, associate professor, insect behavior, Department of Entomology and Nematology, UF/IFAS North Florida Research and Education Center, Quincy, FL; Jawwad Qureshi, professor, Department of Entomology and Nematology, UF/IFAS Southwest Florida Research and Education Center, Immokalee, FL; Lukasz Stelinski, professor, Department of Entomology and Nematology, UF/IFAS Citrus Research and Education Center; UF/IFAS Extension, Gainesville, FL 32611.

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