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CUPS Citrus Pest Management

Funding



National Institute of Food and Agriculture
U.S. DEPARTMENT OF AGRICULTURE

CUPS Citrus Pest Management



Indian River Research and Education
Center CUPS Facility

- Citrus Under Protective Screen (CUPS) production system is being implemented to grow citrus free from Asian citrus psyllid (ACP), an insect pest that vectors huanglongbing or citrus greening disease which is devastating citrus crops in traditional open production systems.
- These structures provide significant protection from the vector and the disease.

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CLM



Thrips



Scale Infestation



Mealybugs



Mites

- Arthropod incursions are possible in CUPS, depending upon the mesh size of the screen used to construct the structures and through other entry points such as doors.
- While limited, few ACP and several other pests such as citrus leafminer (CLM), thrips, scales, mealybugs, and mites were observed in these structures.

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Parasitoids



Predators

- Besides ACP, several other pests were also significantly reduced in the CUPS compared with the open production system. CLM populations were reduced by more than 80%, which is important considering that larval feeding by this pest causes direct damage and exacerbates citrus canker.
- Large predators such as ladybeetles and lacewings were not observed in the CUPS, however, predatory mites and parasitoids of several pests were common.

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Yellow Sticky Card



Tap Sampling Method



CLM Pheromone Trap

- Regular monitoring using multiple tools and methods is a way to obtain instant information on pest situations and make management decisions.
- Yellow sticky cards installed in the CUPS capture ACP adults and thrips while the CLM pheromone trap captures adult male moths. The tap sampling method detects ACP, CLM, thrips, and mites. For mites, using a black instead of white background provides better results from tap sampling.

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ACP Eggs and Nymphs



- Visual examination of shoots, stems, flowers, and fruit is also critical to detect infestation by ACP, CLM, scales, mealybugs, thrips, and mites.
- A magnifying lens is needed to detect these pests, particularly at their immature stages.
- ACP nymphs and CLM larvae are found in young shoots with newly developing soft leaves. Scales, mealybugs, and mites are found on foliage and fruit. Thrips are common in flowers.

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- Chemical treatments are more effective when the pest population is low and reduce the need for repeated applications to control a high infestation.
- Chances of pests developing resistance to a particular mode of action (MOA) are high in CUPS if the same MOA is repeated because pests are largely confined within the structure once populations establish.

