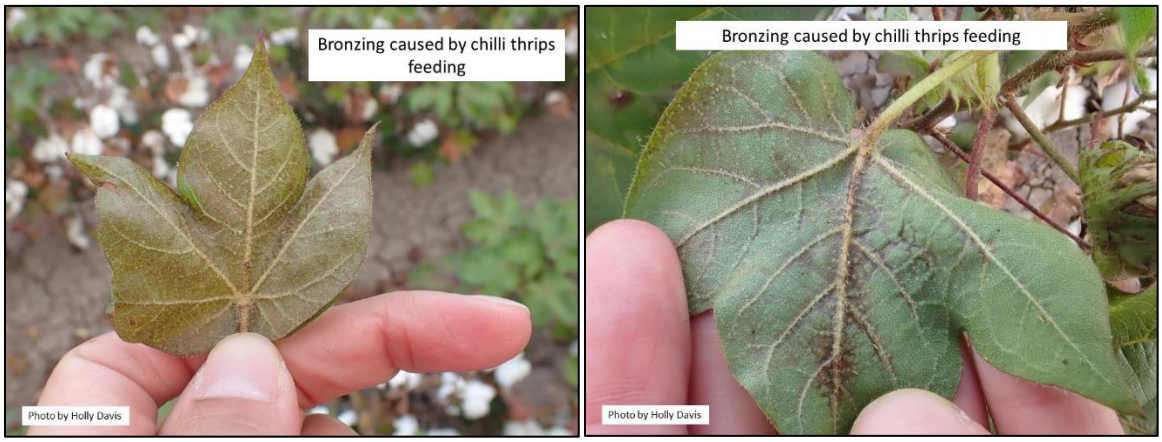
Chilli Thrips Outbreak in Cotton in the Lower Rio Grande Valley

Recent reports of foliage bronzing and leaf drop in cotton has sparked interest in areas of the Rio Grande Valley. Upon closer investigation the cause of this damage was identified as a type of thrips, commonly called chilli thrips, *Scirtothrips dorsalis*.

Chilli thrips are not new to the Rio Grande Valley, but they have the potential to become a pest in multiple crops. These thrips are thought to originally be from Southeast Asia and were first detected in Florida in 1991 and in Southeast Texas in 2005. Dr. Mamoudou Sétamou, Professor of Entomology & IPM Specialist Texas A&M University-Kingsville Citrus Center, first discovered and confirmed chilli thrips in the Rio Grande Valley in citrus in 2018 and has detected them every year since in citrus groves located in Hidalgo and Cameron counties. They are known to infest an impressively wide range of host plants, more than 100 species from at least 40 different plant families, and the list may continue to grow as they expand their range. Among known plant hosts are bean, citrus, corn, cotton, eggplant, melon, peanut, pepper, rose, and tomato. So, this pest is one we are going to keep a close eye on.

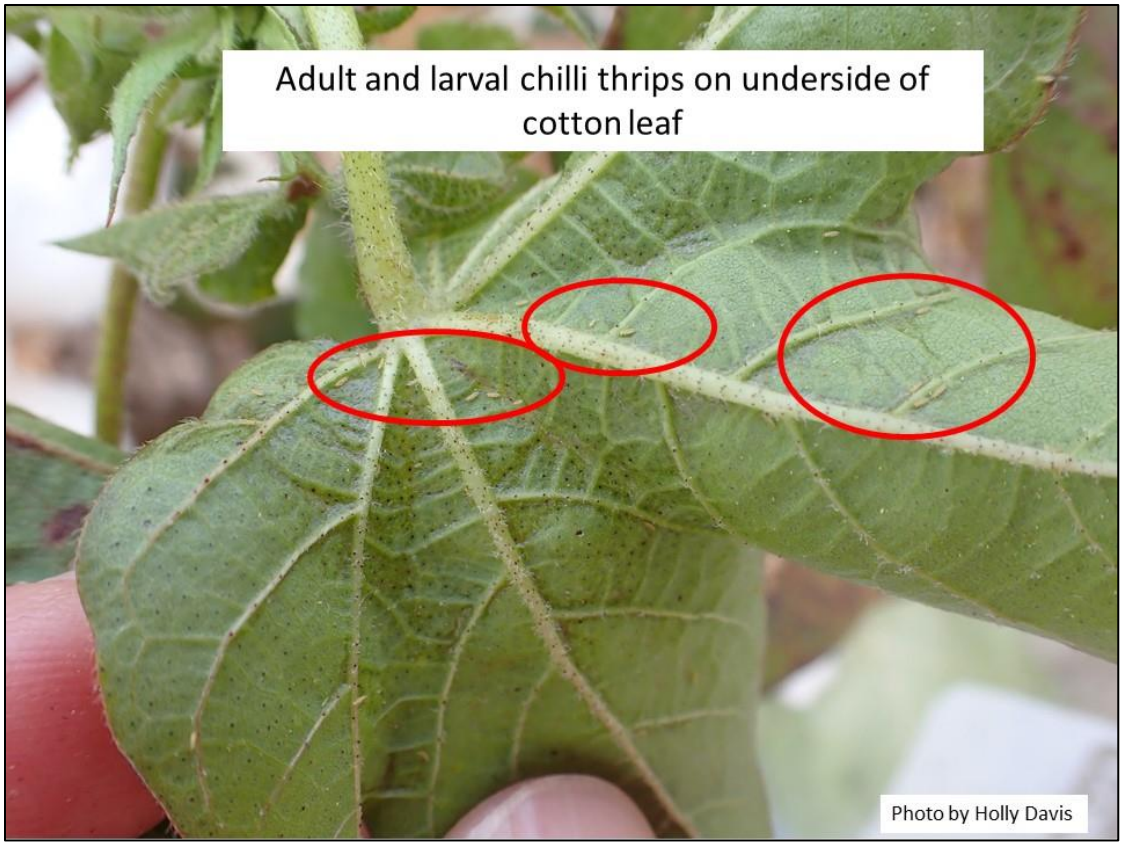
Damage Identification and Life Cycle

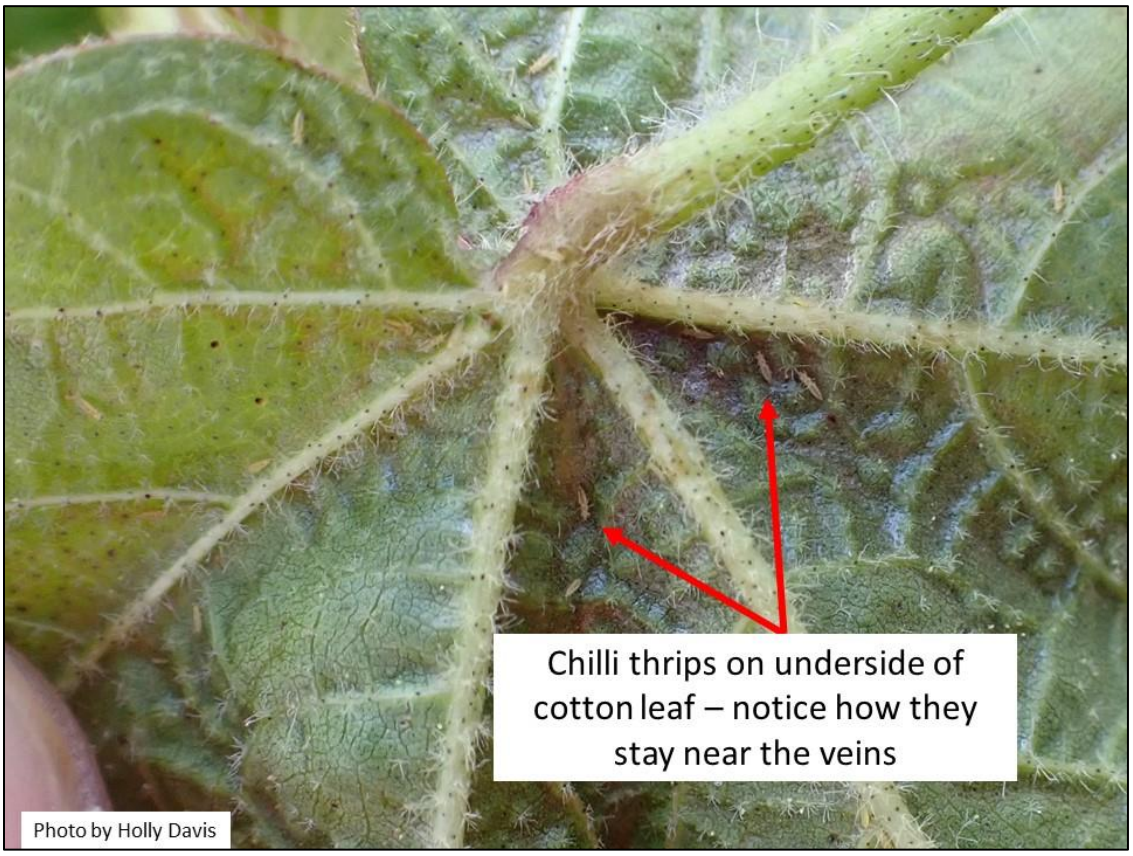
In cotton, the first clue that a field is infested with chilli thrips is the bronzing appearance of leaves in the upper canopy. Like other thrips species, they have piercing-sucking mouthparts used extract contents from individual plant cells. This feeding causes characteristic bronzing and may also lead to cupping or other distortion of leaves. Severe feeding causes leaves to become brittle and drop from the plant.



Detection of chilli thrips in the field is difficult, and identification is nearly impossible without magnification. The tiny (≈2mm long) cigar-shaped adults are pale in color with black, feathery wings. Immatures, called larvae, look similar to adults but are even smaller and lack wings. Females insert anywhere from 60 – 200 microscopic eggs into plant tissue. The length of time it takes to complete their life cycle varies depending on temperature and host plant but ranges from 14 – 20 days.

Unlike similar looking species such as the Western flower thrips, which may be found in flowers feeding on pollen, chilli thrips only feed on foliage and are typically found on the undersides of leaves near the mid-vein or borders of leaves. However, when population densities are high, some individuals may be found feeding on the upper surface of leaves. When scouting for this pest one must observe the underside of a leaf with a hand lens for several moments. Initially thrips may not be visible as they are near the mid-vein but will are fast moving and will begin to move around on the leaf surface, making them more visible.


Adult and larval chilli thrips on underside of cotton leaf
Photo by Holly Davis


Chilli thrips on underside of cotton leaf – notice how they stay near the veins
Photo by Holly Davis

Damage Potential

Chilli thrips have been present in citrus (and possibly other crops) in the Valley since at least 2018. However, this is the first time we have seen populations outside of citrus large enough to cause noticeable damage on cotton. It is difficult to determine why populations have "exploded" in cotton this season or to predict what will happen in other crops this year and in seasons to come. Because we know that this species is capable of feeding and reproducing on many crops grown year-around here in the Valley, we plan to monitor them closely by initiating Valley-wide surveys and management strategies.

Chilli thrips are known to vector at least seven viruses to various crops including chilli leaf curl virus, peanut necrosis virus, tobacco streak virus, melon yellow spot virus, watermelon silver mottle virus, and capsicum chlorosis virus, although there are no reports that they have been vectors of any of these viruses in Texas.

Management

In most cases, there is no longer a need to control chilli thrips in cotton this growing season. Looking down the road, management may be needed if they move into fall crops. Although chilli thrips are an invasive species, research in Florida has shown that natural enemies, including minute pirate bugs, lacewings, and lady beetles may aid in reducing chilli thrips populations. Thus, the use of broad-spectrum insecticides may promote thrips outbreaks by removing key beneficial insects. Studies conducted by Seal et al. (2006, 2008, 2009) have indicated that pyrethroids are not effective in controlling chilli thrips while imidacloprid and spinetoram provide good control and allow for the continued growth of natural enemy populations. Rotating between different classes of insecticides will be important in reducing the development of resistance. In addition, controlling weeds, which may serve as alternative hosts is important.

While this is a relatively new potential pest for South Texas, Florida has had a few years to learn about chilli thrips and have produced some very useful information that can be found at the following links:

Good general information:

http://entnemdept.ufl.edu/creatures/orn/thrips/chilli_thrips.htm

Photos of damage on various host plants and more detailed control information:

https://mrec.ifas.ufl.edu/lso/thripslinks.htm

Addition resources cited:

- Seal DR, Ciomperlik M, Richards ML, Klassen W. 2006. Comparative effectiveness of chemical insecticides against the chilli thrips, *Scirtothrips dorsalis* Hood (Thysanoptera: Thripidae), on pepper and their compatibility with natural enemies. Crop Protection 25: 949-955.

- Seal DR, Kumar V, Klassen W, Sabine K. 2008. Response of chilli thrips, *Scirtothrips dorsalis*, and melon thrips, *Thrips palmi*, to some selected insecticides. Proceedings of the Caribbean Food Crops Society 44: 578.
- Seal DR, Kumar V. (2009, in review). Biological response of chilli thrips, *Scirtothrips dorsalis* Hood (Thysanoptera: Thripidae), to various regimes of chemical and biorational insecticides. Crop Protection.