Mighty Mites: Minuscule Makers of Mayhem by Dr Ochoa

Plant-feeding (phytophagous) mites represent about 14,000 known species in several superfamilies, but it is suspected that many more are as yet unknown. These mites are classified within several superfamilies, of which the most important are:

- **TheTetranychoidea (including the spidermites, flat mites, and peacock mites);**
- **The Tarsonemoidea (white mites, broad mite, obligately phytophagous);**
- **The Eriophyoidea (gall mites, rust mites, bud mites, including three major families,**
- **The Eriophyidae, the Phytoptidae, and the Diptilomiopidae); and the Arachoidea (including several families feeding on bulbous plants).**
- **Within the Tetranychoidea, the family Tetranychidae (Spider mites) includes about 2,000 described species, which can cause significant plant damage.**
- **The Tenuipalpidae (Flat mites) covers at least 1,100 species, including multiple Brevipalpus species which transmit plant viruses.**
- **The Tuckerellidae, known as peacock mites, have over 50 species associated with many tropical fruit trees.**
- **The Linotetranidae (root flat mites) feed on the roots of grasses worldwide.**
- **Many species in the Tarsonemoidea (white mites, broad mites), although feeding in the forest canopy and many ornamental plants, may be efficient carriers of plant-infecting bacteria and fungi which can spread diseases.**
- **Within the Eriophyoidea, the Eriophyidae include most of the known plant viral vectors with an estimate of up to 1 million species.**
- **The Astigmata mites (including dust mites, mold mites, ground mites) includes several families with mites which carry bacteria and fungi, especially to bulbous plants; some of these mites are recognized worldwide as major contaminants in plant propagation programs.**

The interactions between mites and their hosts can be very varied.

- **Eriophyid mites are highly specialized pests that cause important damage to fruit, vegetable, forest, and ornamental plants all over the world.**
- **Eriophyids are classified as vagrant, gall-making, refugeseeking and bud inhabiting species based on their intimate relationships with their hosts.**
- **Vagrant eriophyid species cause nonspecific symptoms such as russeting and bronzing.**
- **Gall-making eriophyid species cause symptoms, such as closed galls (i.e., pouch galls) and open galls (i.e., erinea), and witches' brooms. Refuge-seeking eriophyid species cause rosetting, while bud inhabiting eriophyid species often cause fruit distortion. Most eriophyid mites are extremely host-specific, although some plant species are affected by several species of mites, often with different habitats.**

The interactions between mites and their hosts are also highly specific, and gaining an understanding of a range of mite-host relationships should provide insights into the behavior of other mites on their specific hosts, including an understanding of which mite species are likely to be the vectors of viruses affecting those plant species. For example, camellias are known as hosts to at least four distinct species of eriophyid mites, and to be infected by at least two distinct viruses presumed to be mite-transmitted, although the vector(s) have yet to be identified.

- ***Brevipalpus* (a very important genus of flat mite species) typically feed on a wider variety of host plants, but have highly specific interactions with different viruses. This may be a result of a combination of the host ranges of both the virus and the mites.**
- **Perhaps as a consequence, *Brevipalpus* transmitted viruses tend to have broader host ranges than eriophyid-transmitted viruses.**

There are predator mites, several families, that help controlling plant feeding mites, but also some of them bite wild and domestic animals and the humans, these families are in a different branch of MITES related to ticks.

EIG Presentation 4/12/24 - 3-4pm - Please make a reservation!