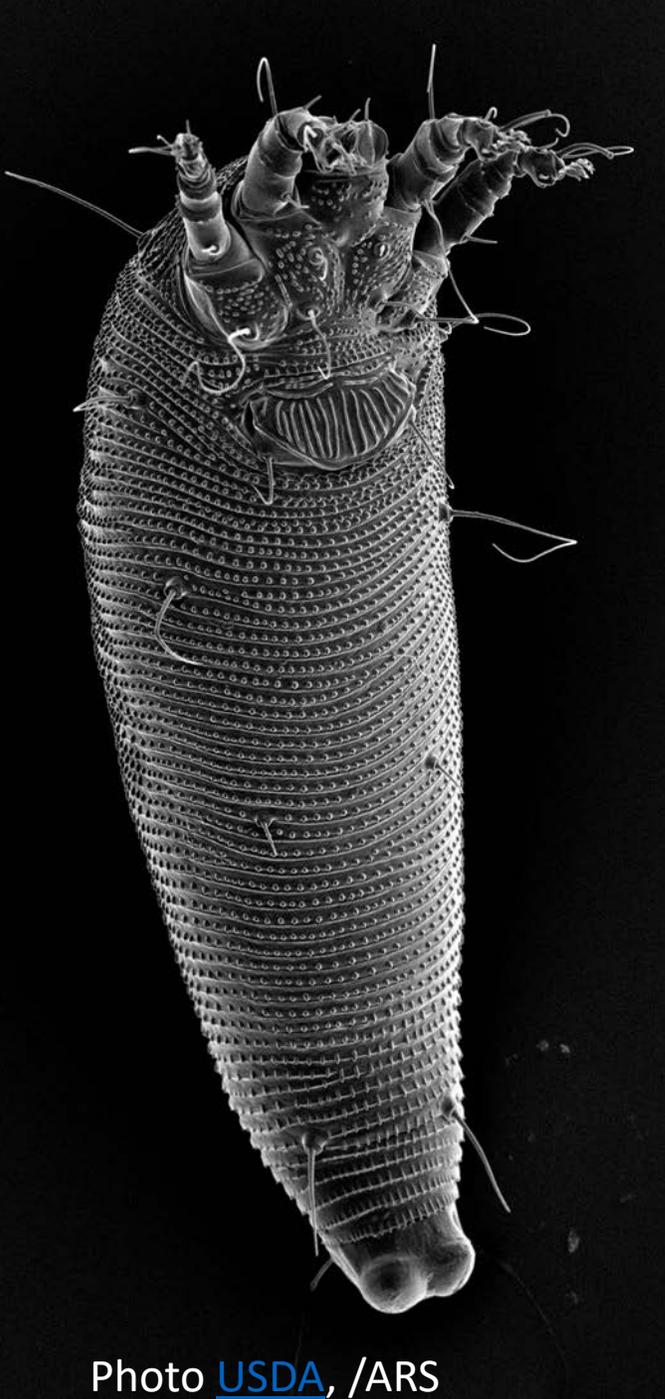


Photo [USDA](#), /ARS



NEW SERIOUS PEST OF LYCHEE AND LONGAN FOUND IN FLORIDA

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Aceria (Eriophyes) litchii

Lychee Erinose Mite **LEM**

- Among the smallest arthropods that feed on plants
- Uses stylets to pierce and feed on leaf epidermal cells
- cells undergo morphological alterations, resulting in the abnormal growth of leaf trichomes, referred to as “**erinea**”



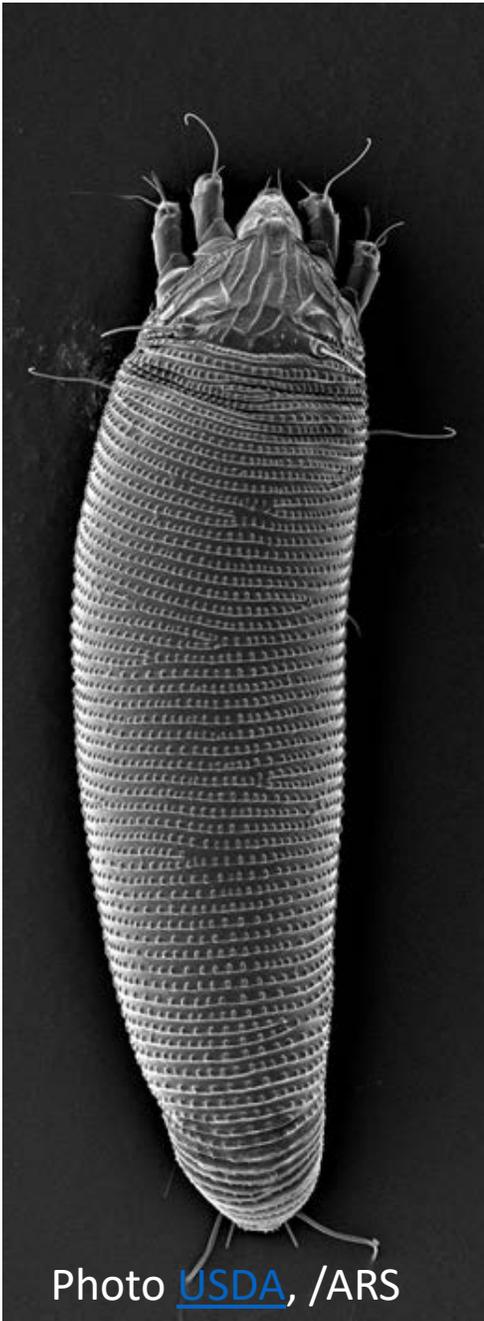
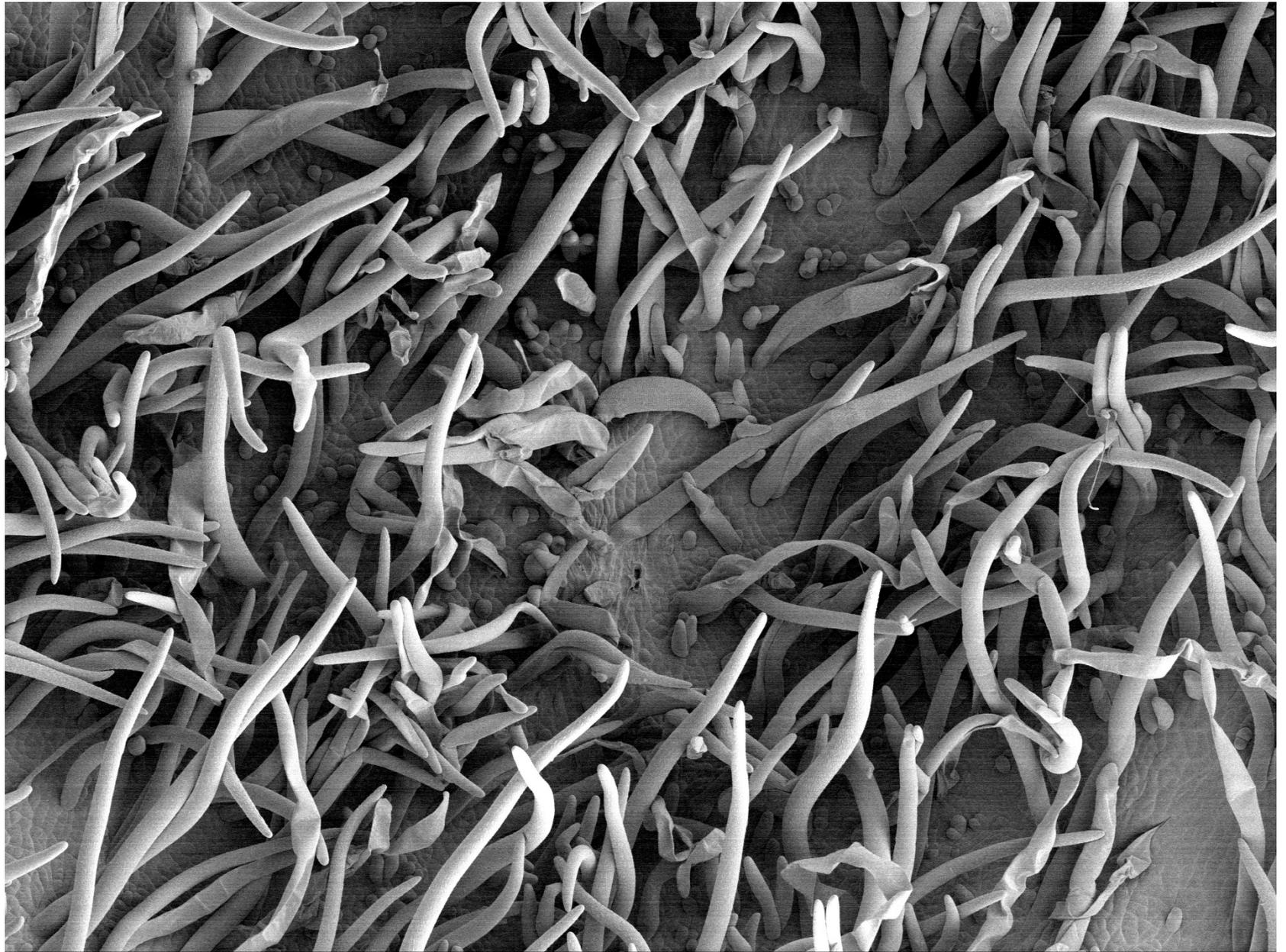


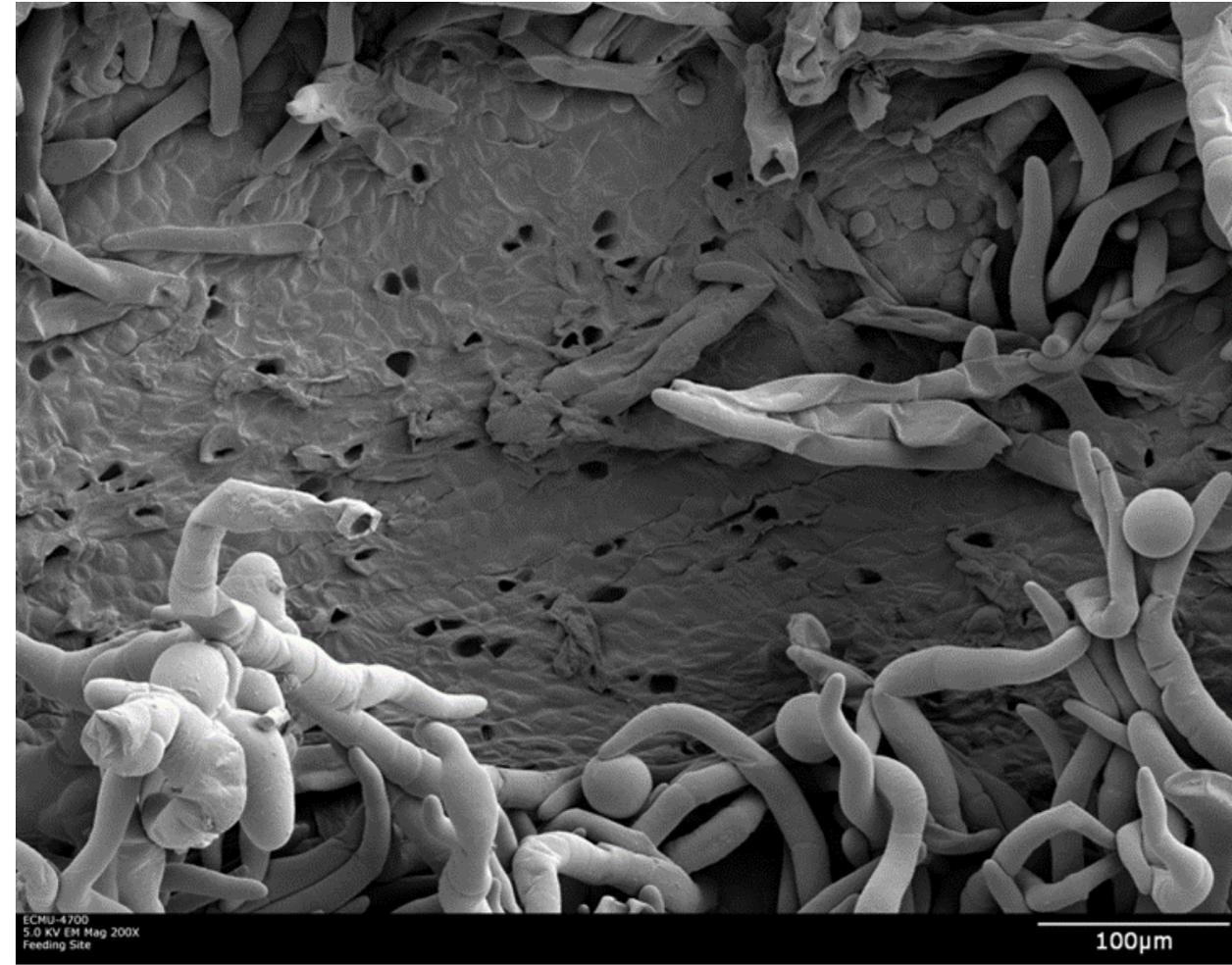
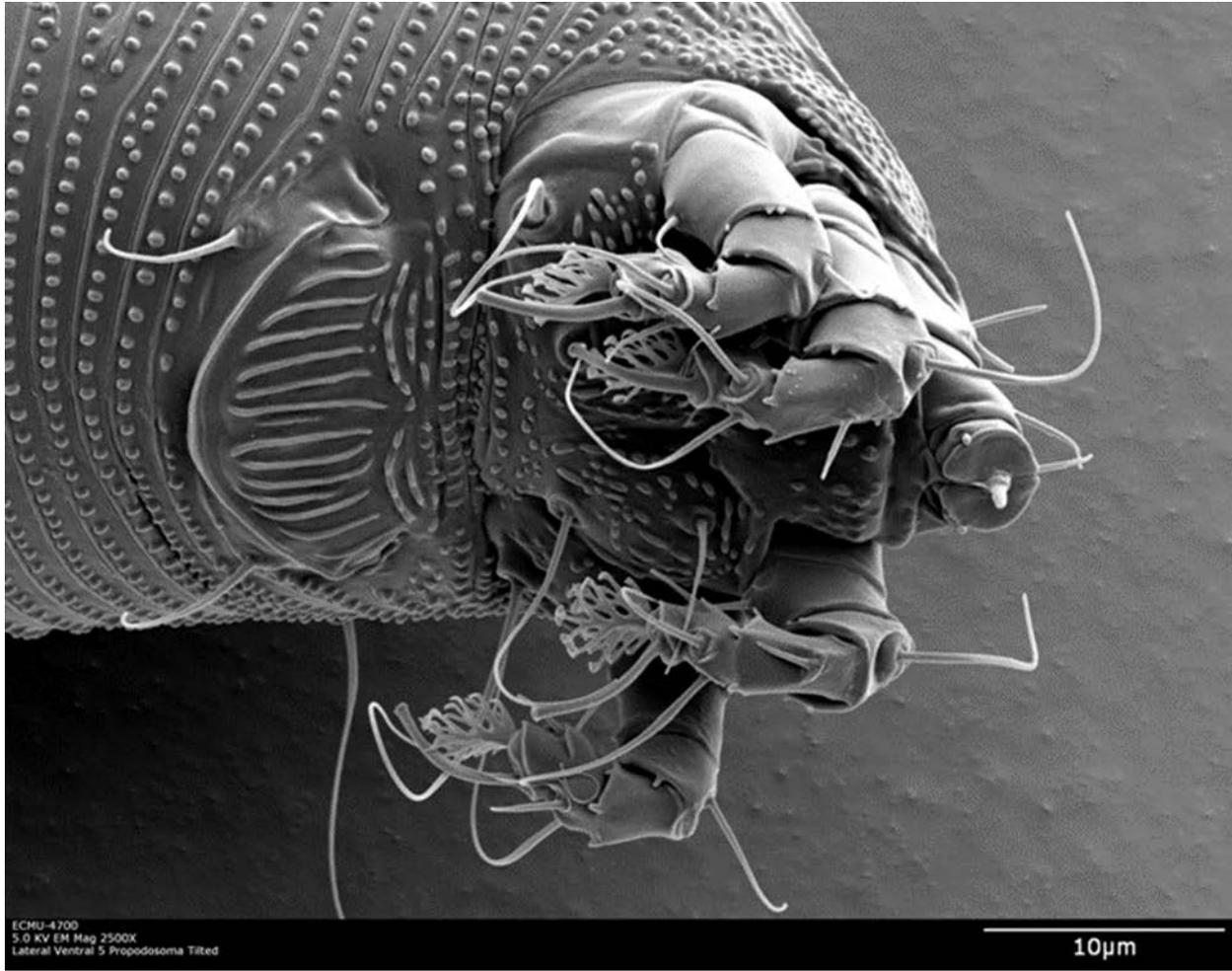
Photo [USDA](#), /ARS



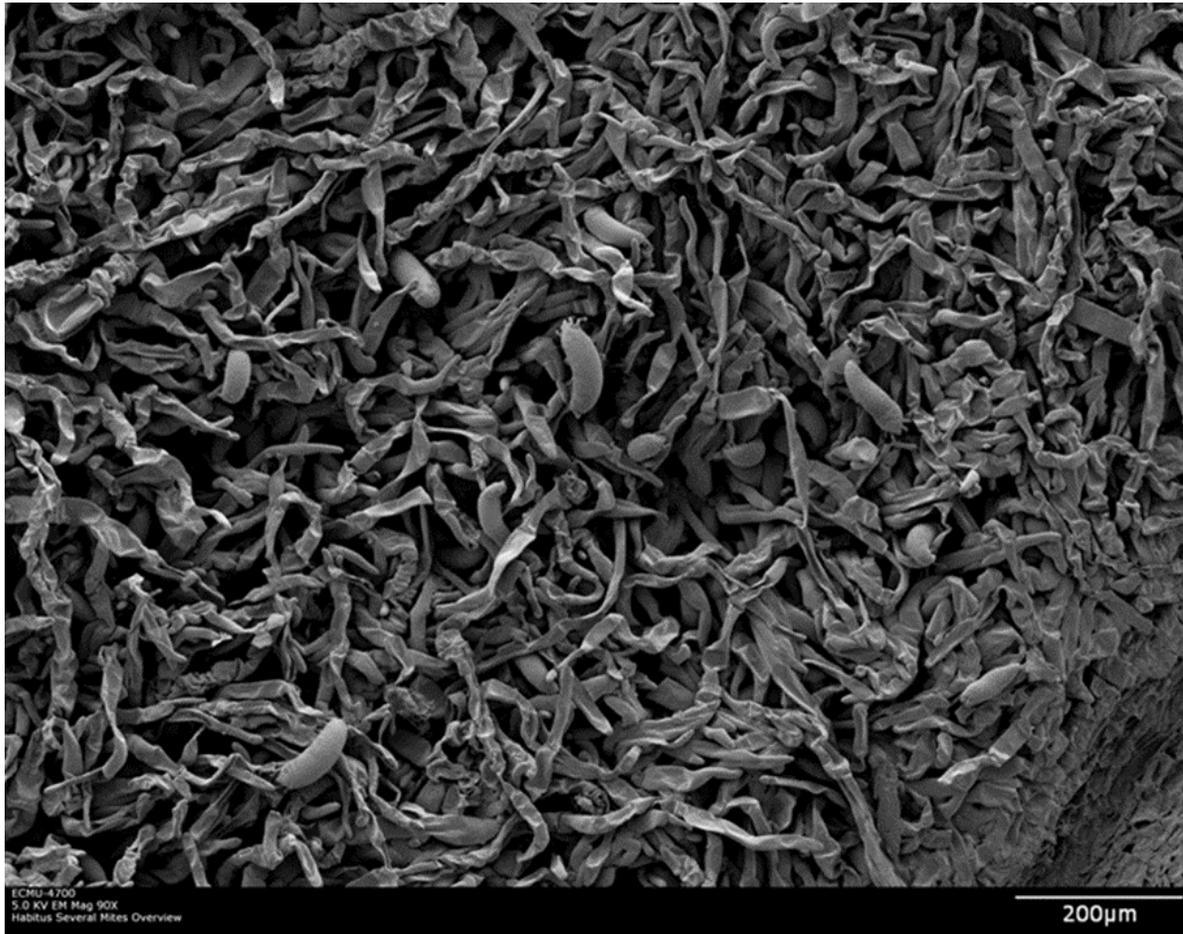
ECMU-4700
5.0 KV EM Mag 100X
Habitus Mite 1

Photo [USDA](#), /ARS

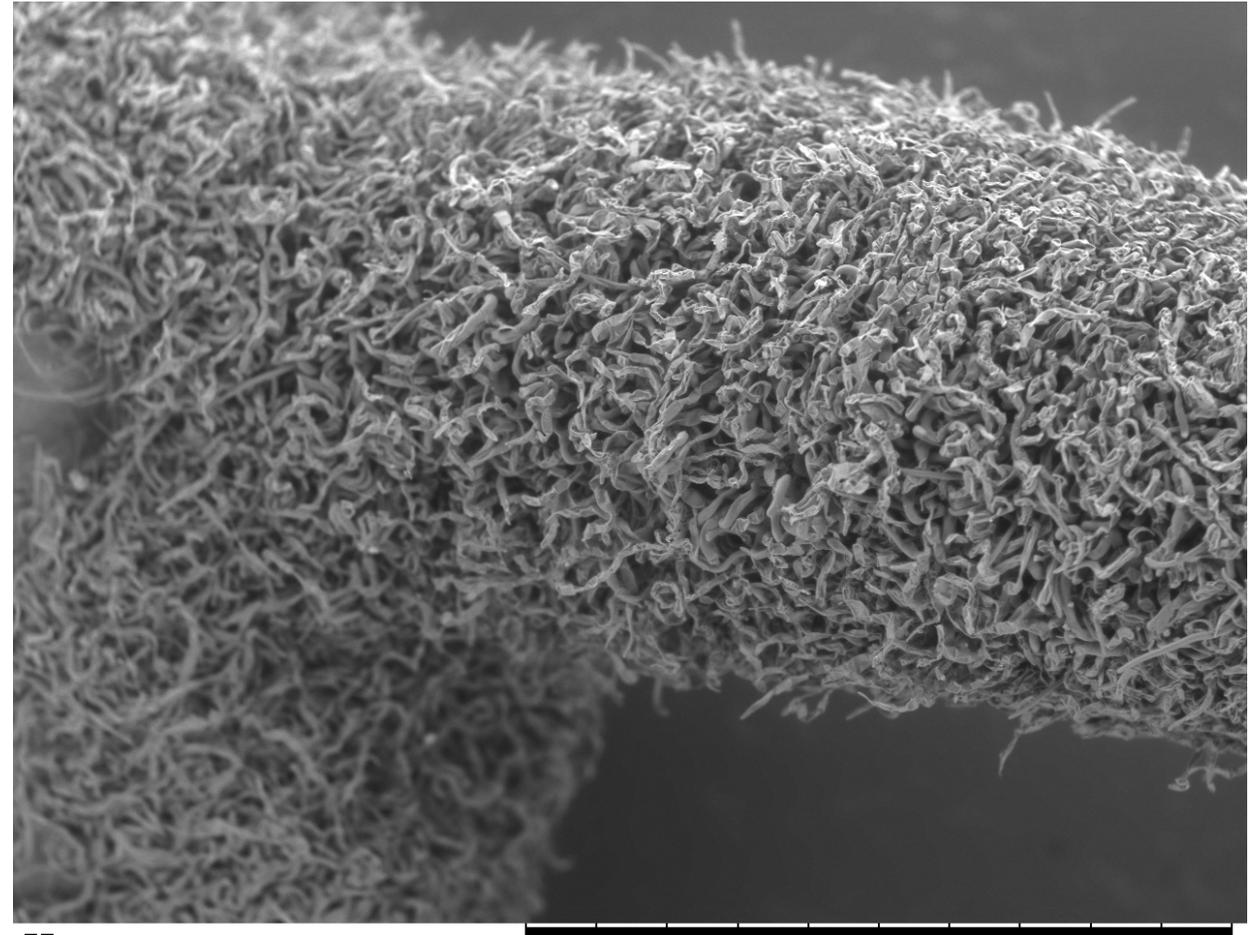
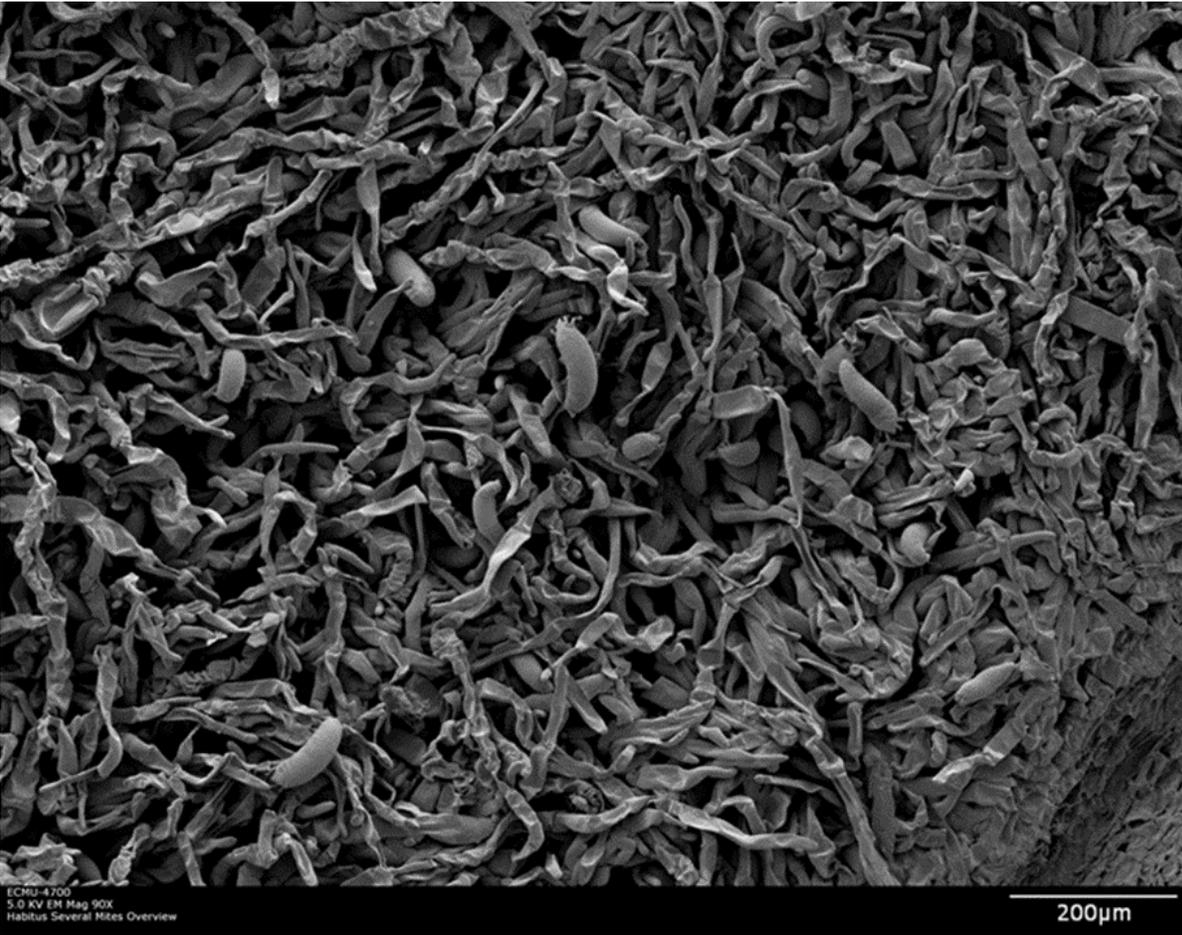
200µm



Photos by G. Bauchan, SEL-USDA., material D. Carrillo FL



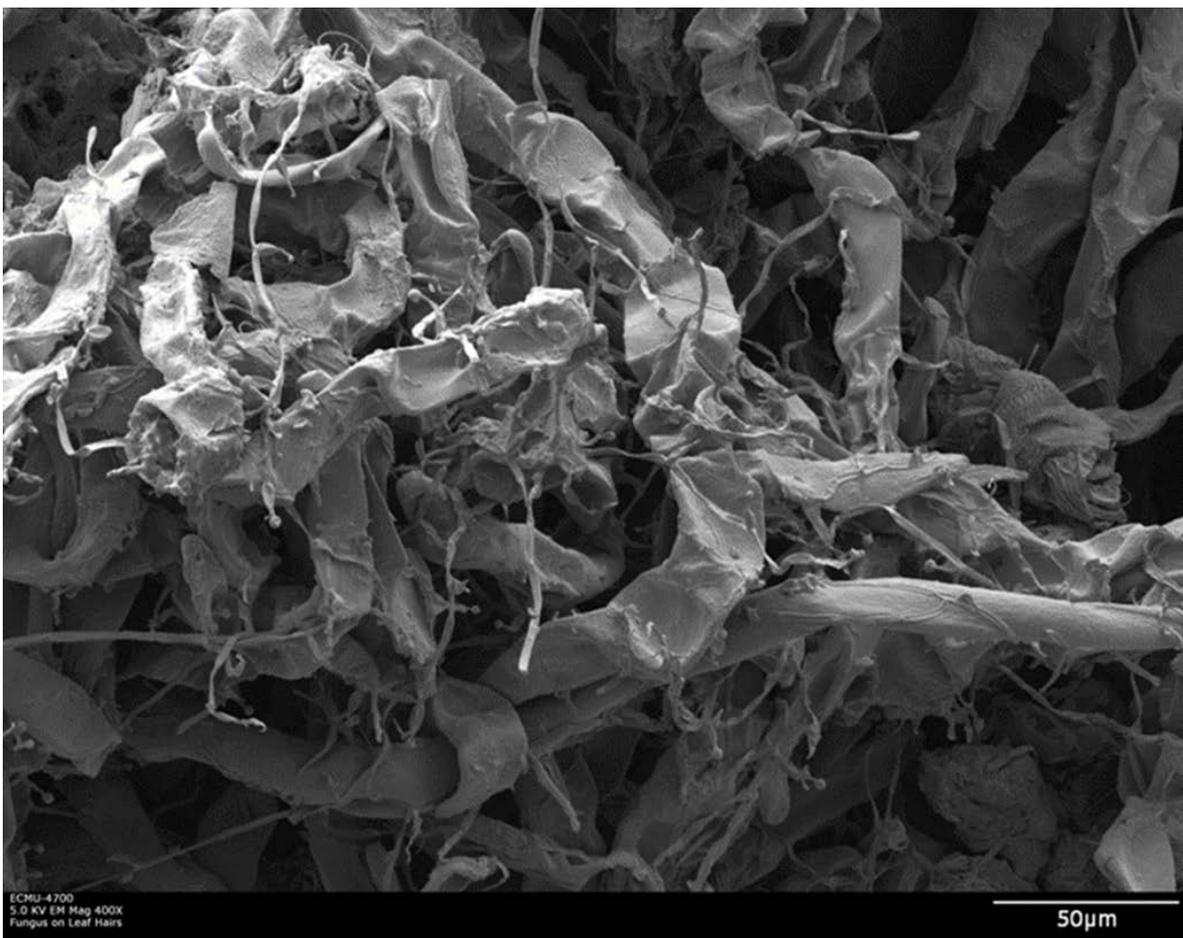
Photos by G. Bauchan, SEL-USDA., material D. Carrillo FL





HL MD6.5 x800 100 μm

Photo by A. Ulsamer, SEL-USDA., material D. Carrillo FL

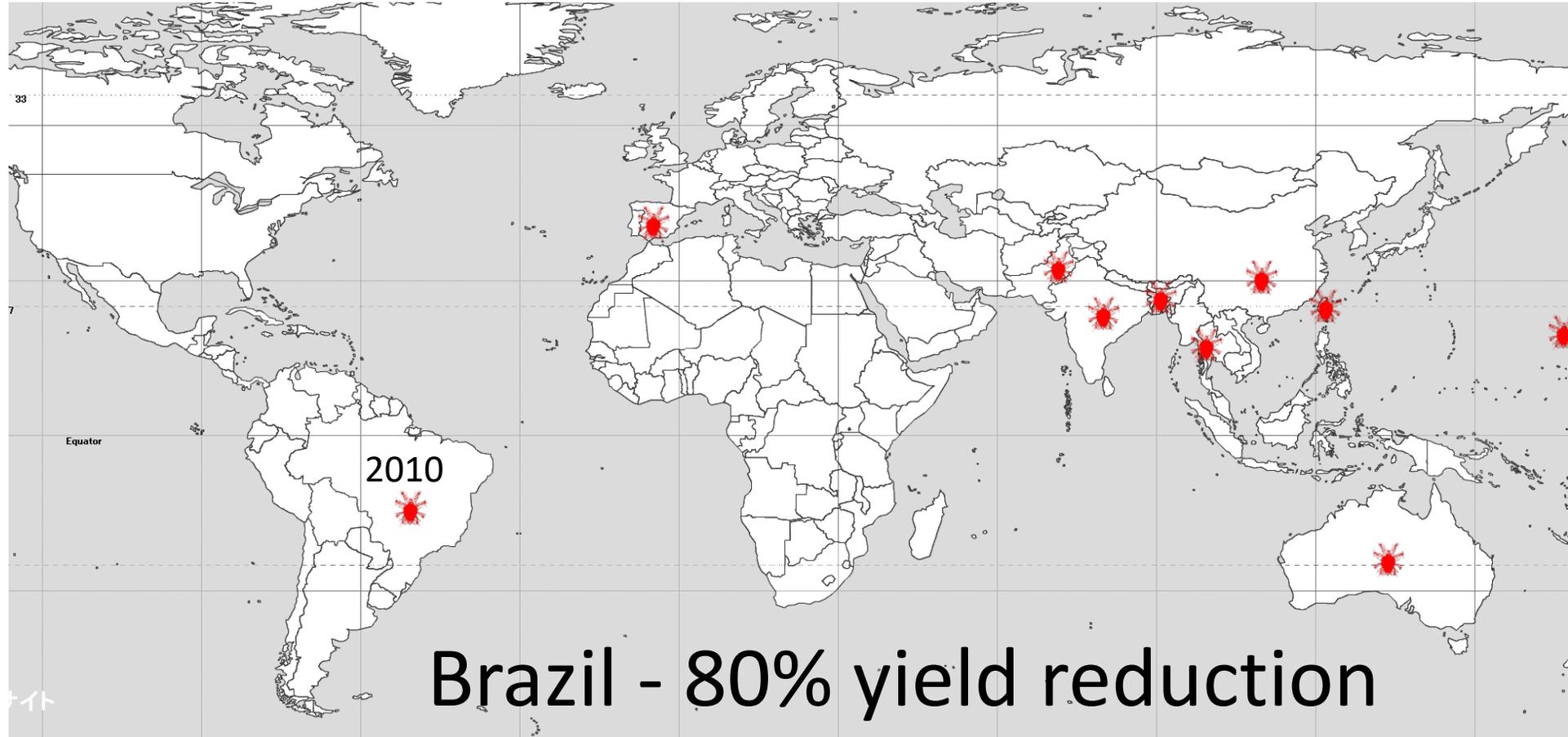


ECHU-4700
5.0 kV EM Mag 400X
Fungus on Leaf Hairs

50μm

Photo by G. Bauchan, SEL-USDA., material D. Carrillo FL

India, Pakistan, Bangladesh, Thailand, China, Taiwan, Australia and Hawaii



Host Range

- LEM is a lychee specialist, but has also been reported to infest longan in Taiwan.
- More susceptible during the flowering and fruiting seasons.
- No information is available about the susceptibility of longan.

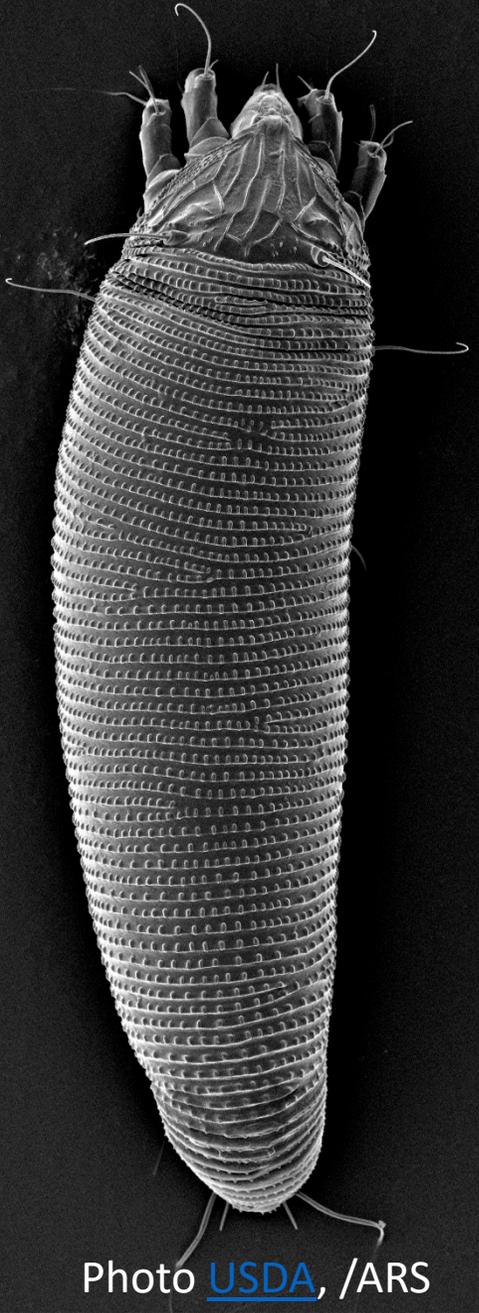


Photo [USDA](#), /ARS

Environmental Conditions

- **Favorable conditions:** new growth on trees, moderately hot and dry periods.
- **Unfavorable conditions:** high temperature, high relative humidity, and heavy rainfall.

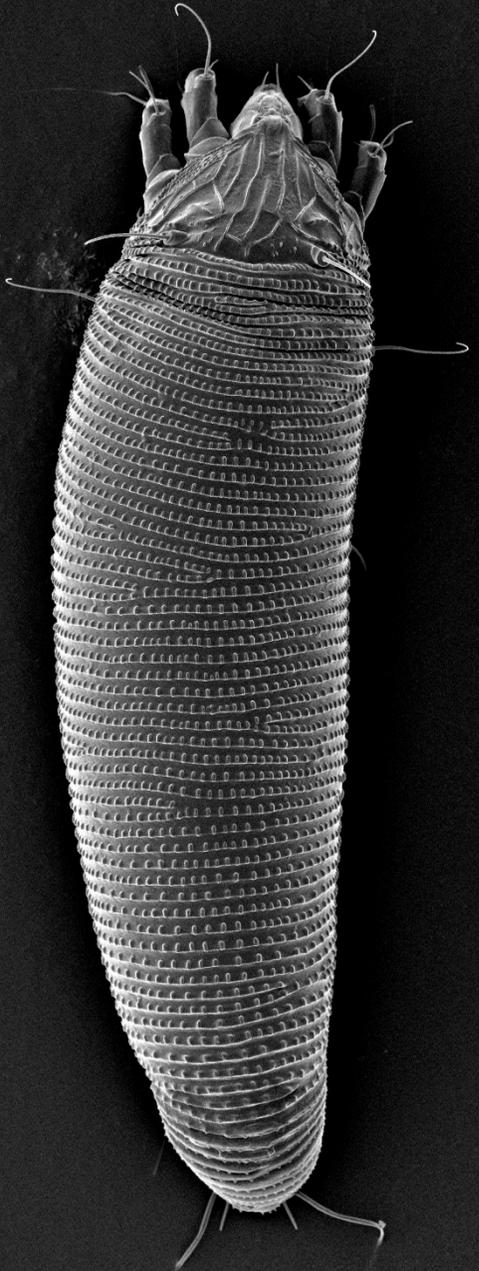


Photo [USDA](#), /ARS

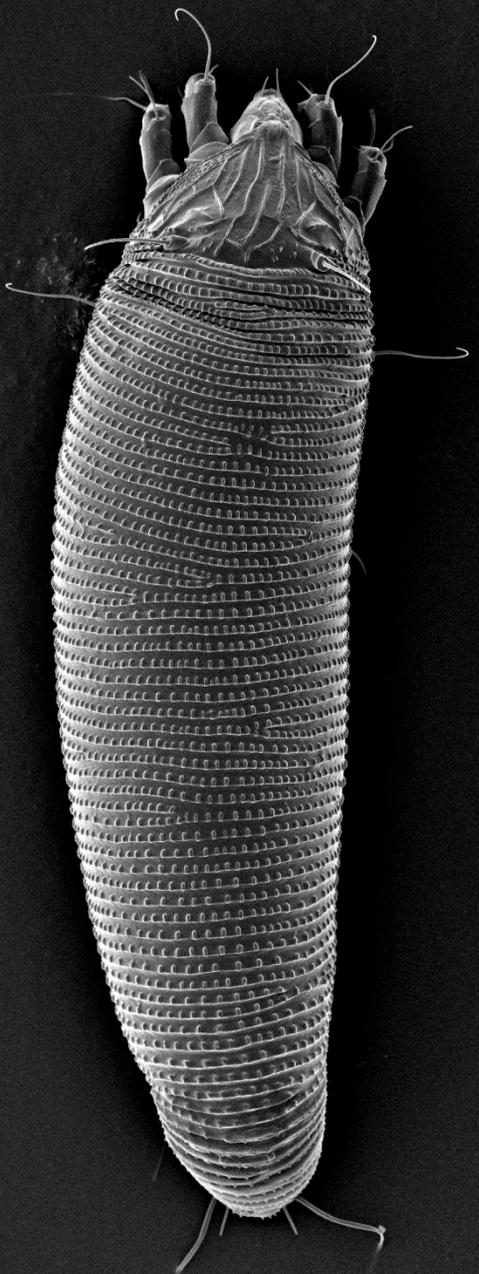


Photo [USDA](#), /ARS

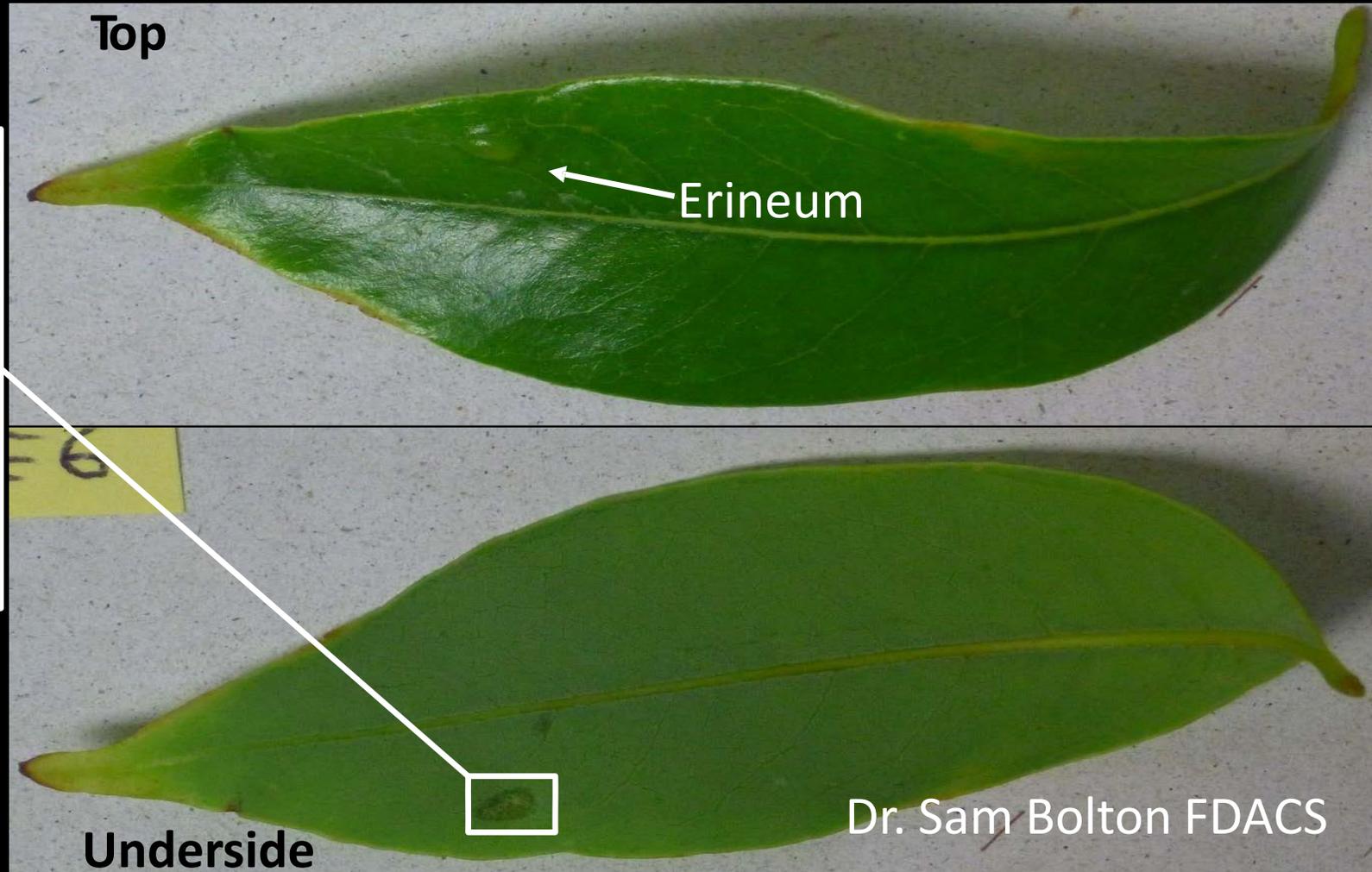
Dispersal

- By drifting on air currents.
- By honey bees.
- By movement of infested plants, especially when propagated as air-layers.
- By humans.

White hairs have a dark green background, which is visible due to the low density of hairs.



Early-stage erineum gall revealed by white hairs on the underside



Top

Erineum

Underside

Dr. Sam Bolton FDACS

Symptoms:

mites infest young
leaves (Pine Island, FL)



Symptoms:

Blisters in young leaves
(Pine Island, FL)



Symptoms:

leaf distortion and curling
(Pine Island, FL)



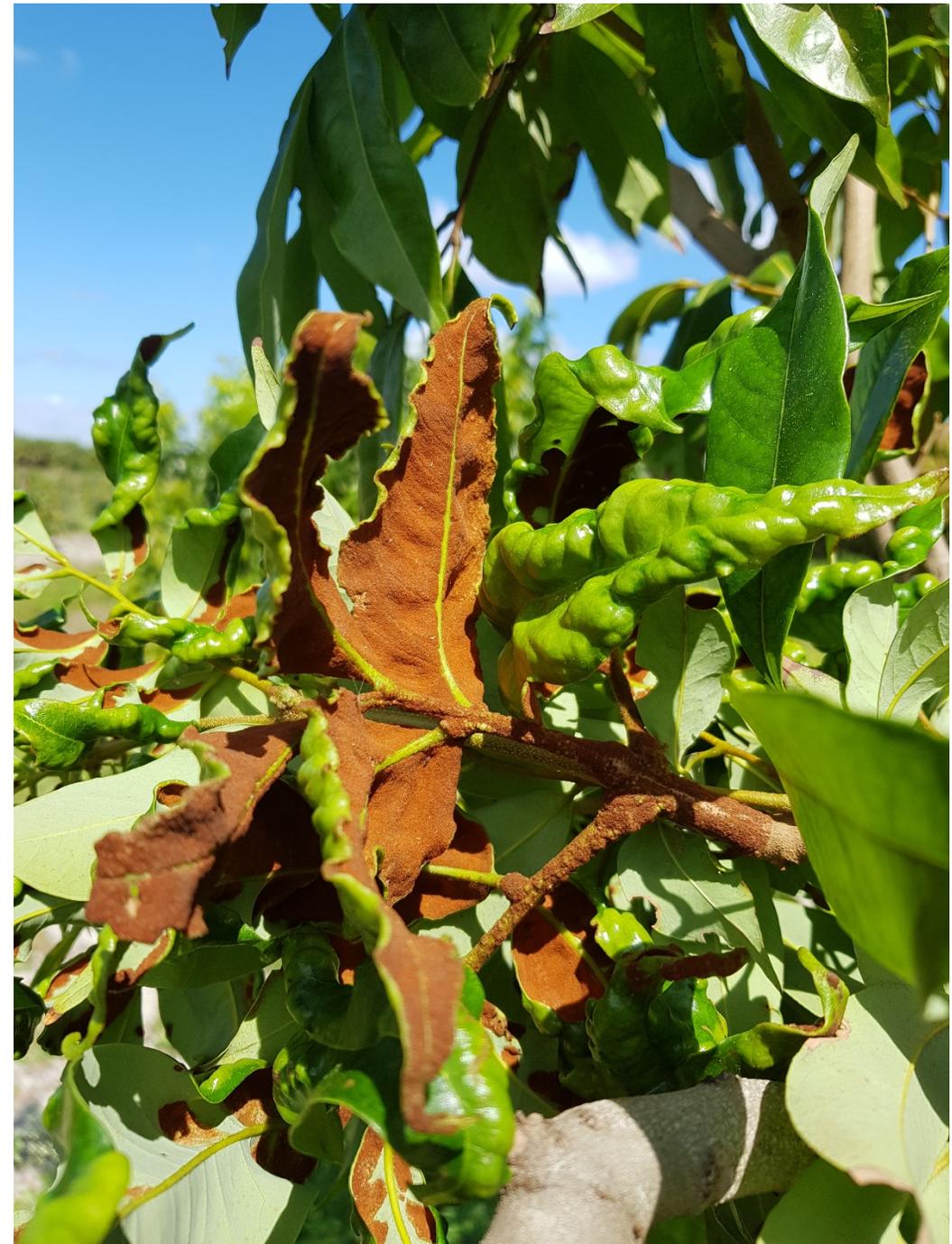
Symptoms:

Hairy red masses on the
underside of the leaf,
“erinea”
(Pine Island, FL)



Symptoms:

Mites and erineia spread to
petioles, stems, panicles
(Pine Island, FL)



Symptoms:

Erinea on panicles
(Brazil)



Symptoms:

Erinea on fruit
(Brazil)



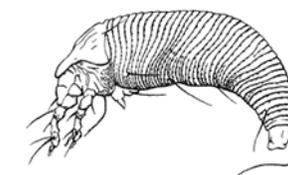
First detection (1955)

- Lychee grove located at Nokomis, Sarasota County.
- LEM failed to establish or was eradicated through a combination of extensive pruning, acaricide treatments and extremely cold temperatures registered in 1960.



Second detection (1993)

- Coral Gables, Miami-Dade County.
- Infested trees imported from China were destroyed in order to eradicate LEM.



Third detection (2018)

Pine Island, Lee County.

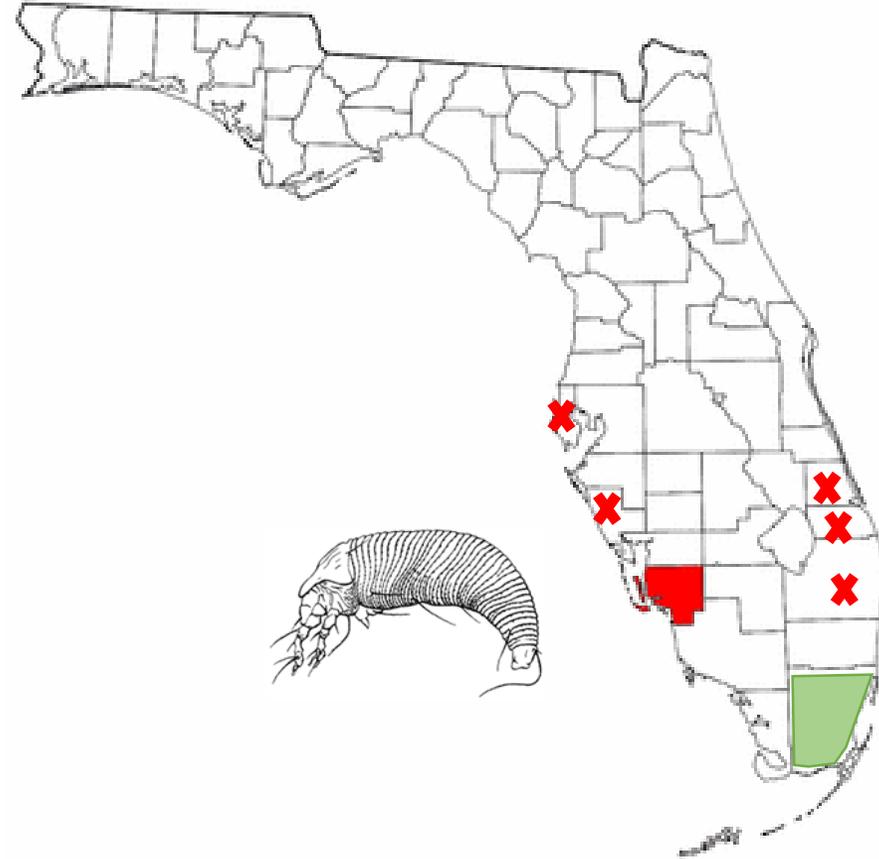
Infestations were recorded on young leaves, stems and inflorescences of approximately 30 young trees.



Third detection (2018)

Epicenter: Pine Island, Lee County. Isolated trees in Cape Coral.

✘ Palm Beach, Martin, St. Lucie, Sarasota and Pinellas Counties in containerized trees from a nursery located in Pine Island.



Current commercial grower control recommendations

Scouting

- LEM migrates to new shoots, leaves, flower buds - any active growth
- Frequent and regular
- Inspect foliage, especially during vegetative flushes
 - After harvest when shoots are induced to grow because of clipping of fruit clusters
 - During any subsequent flush
 - Key is to control this mite prior to the spring bloom, fruit set, and fruit development period
- Please notify FDACS – DPI at 1-888-397-1517 or DPIHelpline@FreshFromFlorida.com immediately if you spot lychee trees with symptoms of an erinose mite infestation

Removal of infested branches

- Prior to pruning, apply whitewash (50:50 mix of white latex paint and wter) to all limbs and trunks from the height at which trees will be cut to the base of the tree (to the ground)
- Remove by pruning all vegetation (leaves) from infested and nearby trees – hatrack trees
- Disinfest all pruning equipment with 10% bleach solution (9:1, water:bleach)
- Do not move this material off-site.
- Obtain burn permit – call local Florida Forest Service
 - Link to interactive contact map <https://www.freshfromflorida.com/Divisions-Offices/Florida-Forest-Service/Wildland-Fire/Burn-Authorizations>
 - Miami-Dade growers call 305-257-0875 or 954-475-4120

Hatracking lychee trees after whitewash

Whitewash - cut



Regrowth
and recovery



Acaricide treatments to protect emerging and new flush

- Time applications to protect emerging and developing flushes
- Protect new flushes from emergence through maturity (hardening off)

Type of agriculture	Effective acaricides	Comments
Conventional	Agri-Mek (abamectin)	Restricted use pesticide; must have license to apply; 2 applications per year/acre maximum; <u>mix with horticultural oil or surfactant</u>
Organic and conventional	Azadirachtin formulations	Numerous brand names: Aza-Direct, AzaGuard, Azatrol EC, others.

Comment: (1) Elemental sulfur is not registered for use on lychee and longan trees at this time and; (2) never apply a sulfur spray within 2-3 weeks or more of an oil spray – result – leaf/stem death

Recommendation sequence for control of LEM

All commercial growers

1. Obtain burn permit
2. Prune trees to remove all foliage
3. Burn all stems and leaves on-site (do not move this material to a new area)

Conventional growers – i.e., non-organic

1. When trees begin to flush, (i.e., new shoots and leaves emerge) apply Agri-Mek mixed with horticultural oil to affected trees and adjacent trees
2. When new flush has fully emerged but before leaves expand, apply azadirachtin at a 7-day interval (this may be 2-3 additional sprays)
3. When the new leaves have fully expanded but **not hardened** off apply Agri-Mek mixed with horticultural oil

Recommendation sequence for control of LEM

Commercial organic growers

1. When trees begin to flush, (i.e., new shoots and leaves emerge) apply azadirachtin mixed with horticultural oil to affected trees and adjacent trees
2. Continue to apply azadirachtin mixed with horticultural oil as leaves expand, at a 7-day interval (this may be 2-3 additional sprays)
3. Continue azadirachtin mixed with horticultural oil applications when the new leaves have fully expanded but not hardened off

All commercial growers

Trees currently with fruit: Infested harvested fruit (and leaves/stems) can move the LEM to new locations and regions of the State. Ideally, all fruit, leaves, and stems of infested trees should be removed and burned immediately.

Recommendation sequence for control of LEM

Homeowners with lychee trees in the home landscape

1. Check with local county regulations on hatracking fruit trees in home landscapes
2. Prune trees to remove all foliage
3. Bag all the debris and call waste management to dispose of in the landfill
4. When trees begin to flush, (i.e., new shoots and leaves emerge) apply azadirachtin mixed with horticultural oil to affected trees and any adjacent lychee trees
5. Continue to apply azadirachtin mixed with horticultural oil as leaves expand, at a 7-day interval (this may be 2-3 additional sprays)
6. Continue azadirachtin mixed with horticultural oil applications when the new leaves have fully expanded but not hardened off

Movement of the erinose mite

- LEM can be moved or disseminated by the movement of infested plants (i.e., leaves, stems, and fruit), especially when plants are propagated as air layers from infested parent trees.
- The mite may also be moved by touching the symptomatic leaves transferring live mites to additional leaves and trees.
- Please do not move these mites by moving infested plant material to new locations.
- Remember to burn infested plant material on site.

For more information

- FDACS DPI
 - <https://www.freshfromflorida.com/Divisions-Offices/Plant-Industry>
 - <https://www.freshfromflorida.com/Divisions-Offices/Plant-Industry/Pests-Diseases/Aceria-litchii-Lychee-Erinose-Mite>
- UF/IFAS Tropical Research and Education Center
 - <http://trec.ifas.ufl.edu/>
 - <http://blogs.ifas.ufl.edu/trec/2018/03/19/new-serious-pest-lychee-longan-trees-found-florida/>
- Miami-Dade County Extension
 - <http://sfyl.ifas.ufl.edu/miami-dade/>
 - Jeff Wasielewski at jwasielewski@ufl.edu or 305-248-3311 x.227

Thank You!

Questions and Discussion



Management

- Cultural control: pruning eliminating and burning infested branches
- Timed acaricide sprays to **protect new flush** after the sanitation
- Sprays start at bud emergence until leaves have hardened
- Natural enemies to be evaluated

