

Photo [USDA](#), /ARS



# Research update on the Lychee Erinose Mite (*Aceria litchii*)

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*Aceria litchii*  
Lychee Erinose Mite **LEM**

Induces an abnormal growth of abundant leaf  
hairs “erinea”









Photo by A. Roda, USDA- APHIS

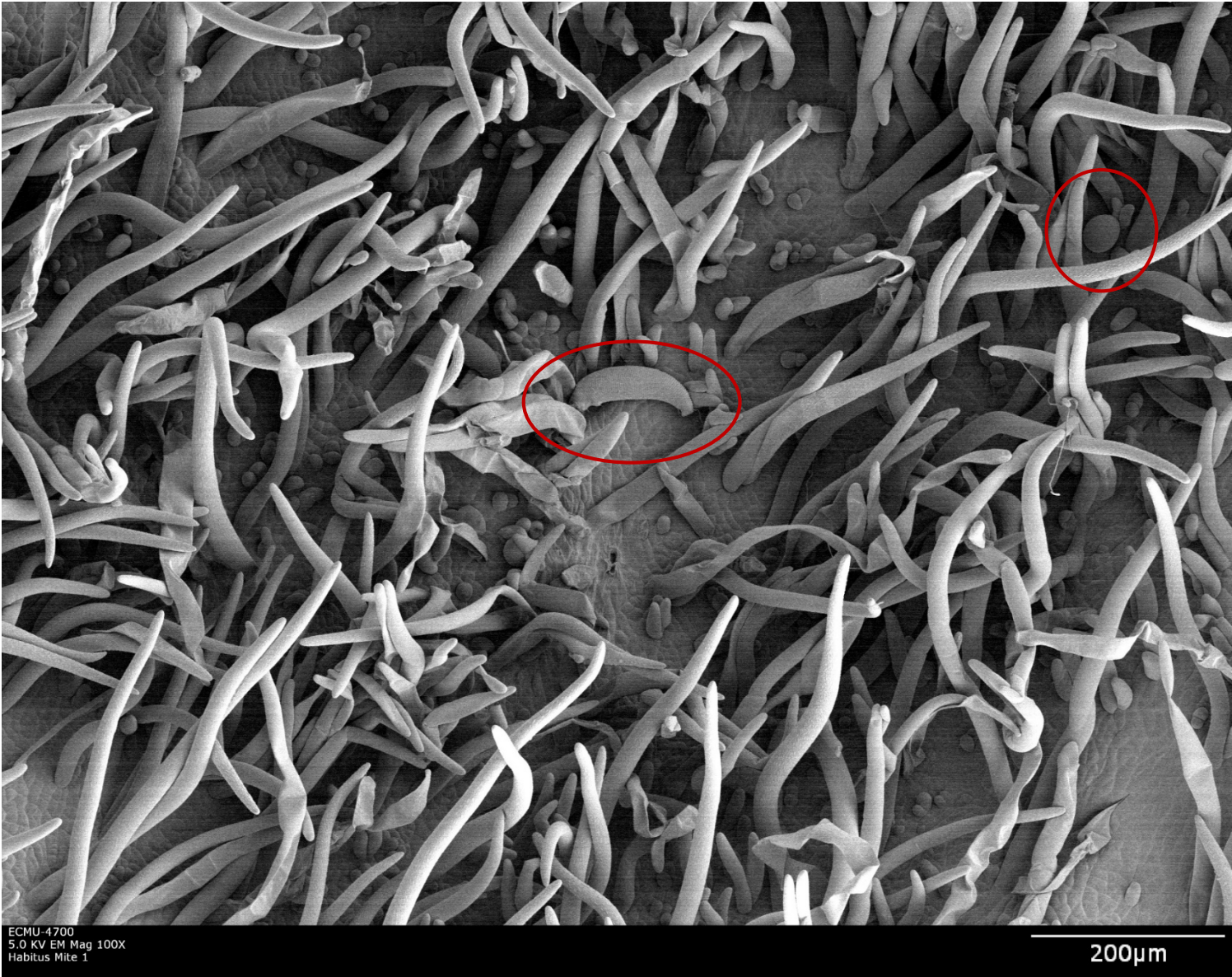


Photo by G. Bauchan, SEL-USDA





# Symptoms





# Host Range

- LEM is a lychee specialist
- More susceptible during the flowering and fruiting seasons





# Dispersal

- Drifting on air currents
- Honey bees
- Plant propagation (air-layers)
- Humans





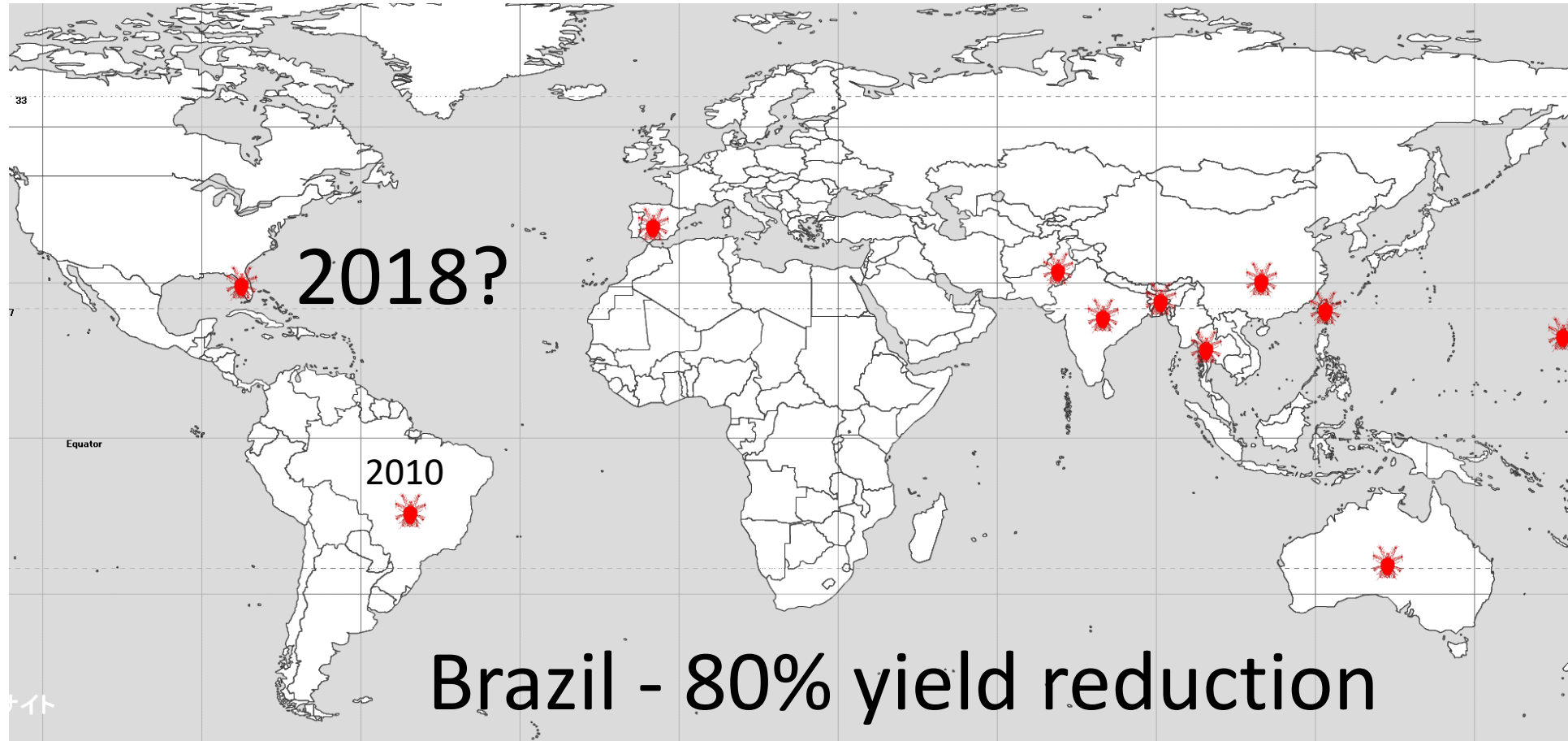
# Environmental Conditions

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





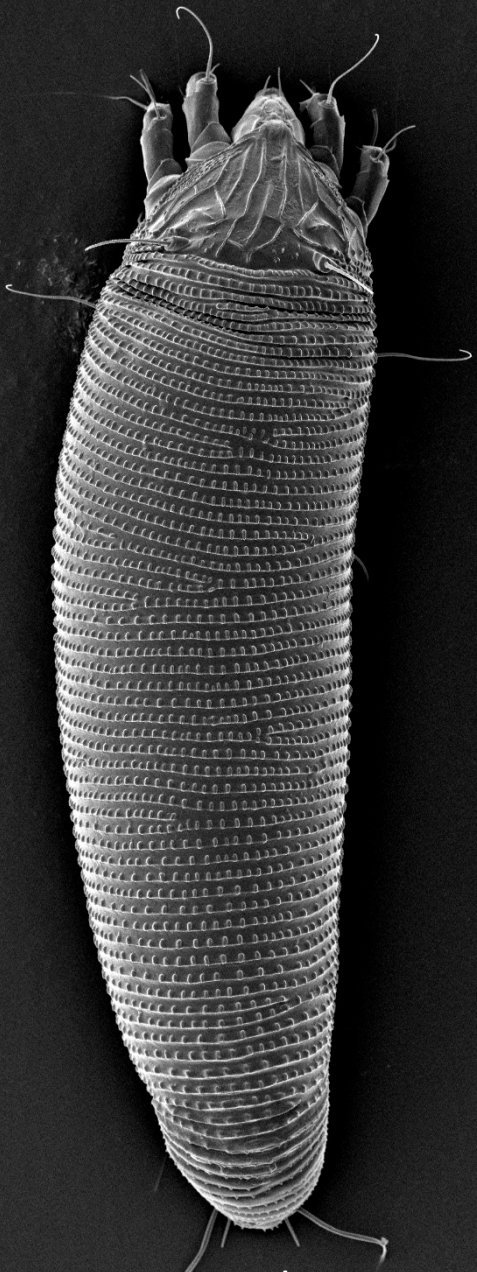
India, Pakistan, Bangladesh, Thailand, China, Taiwan, Australia and Hawaii





## Management in other countries

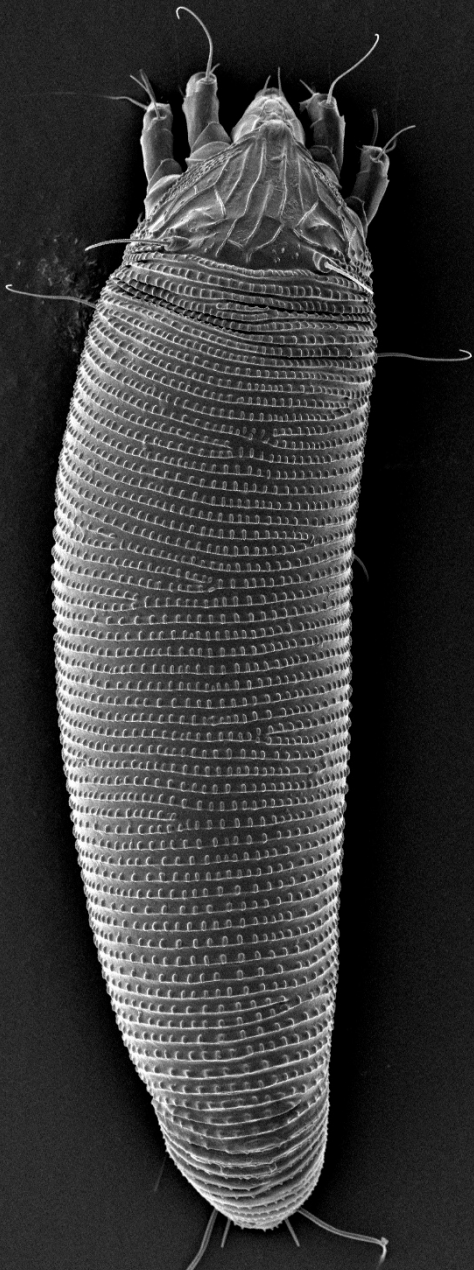
- Timed acaricide sprays to **protect new flush**
- Sprays start at bud emergence until leaves have hardened





# Chemical control

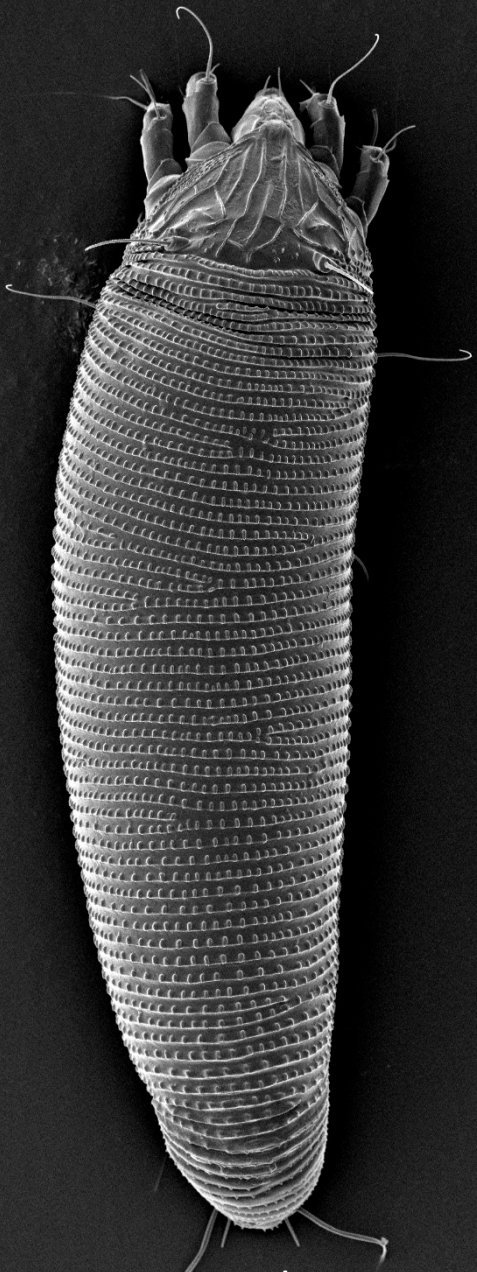
Country	Product	Application
Australia	Dimethoate	3 applications at 2-3 weeks interval
	Wettable sulfur	
India	Dicofol	NA
Thailand	Spiromesifen	2 applications at 0.144 g/L
	Dimethoate	2-3 weeks interval
	Wettable sulfur	
China	Dichlorvos	NA
	Dimethoate	
	Dicofol	
	Chlorpyrifos	
	Isocarbophos	
Brazil	Abamectin	30 ml/ 100 L
	Mineral oil	1000 ml/ 100 L
	Hexythiazox	3 ml/ 100 L
	Fenpyroximate	100 ml/ 100 L
	Sulfur	
	Dimethoate	
USA (Hawaii)	Wettable sulfur	5 applications with 5 lbs/gal monthly





# Cultural practices

- Pruning
- Synchronize flushing
- Burn infested branches

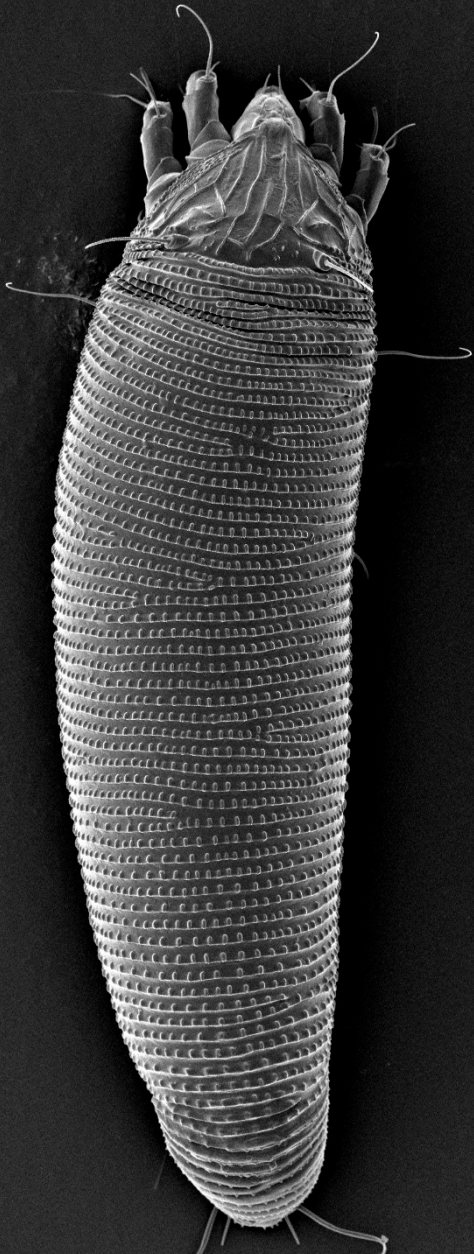




# Biological control

Mainly predatory mites:

- *Phytoseius intermedius*
- *P. woodburyi*
- *Amblyseius compositus*
- *A. herbicolus*
- *Euseius concordis*
- *Iphiseiodes zuluagai*
- *A. largoensis* (Florida)
- *E. mesembrinus* (Florida)





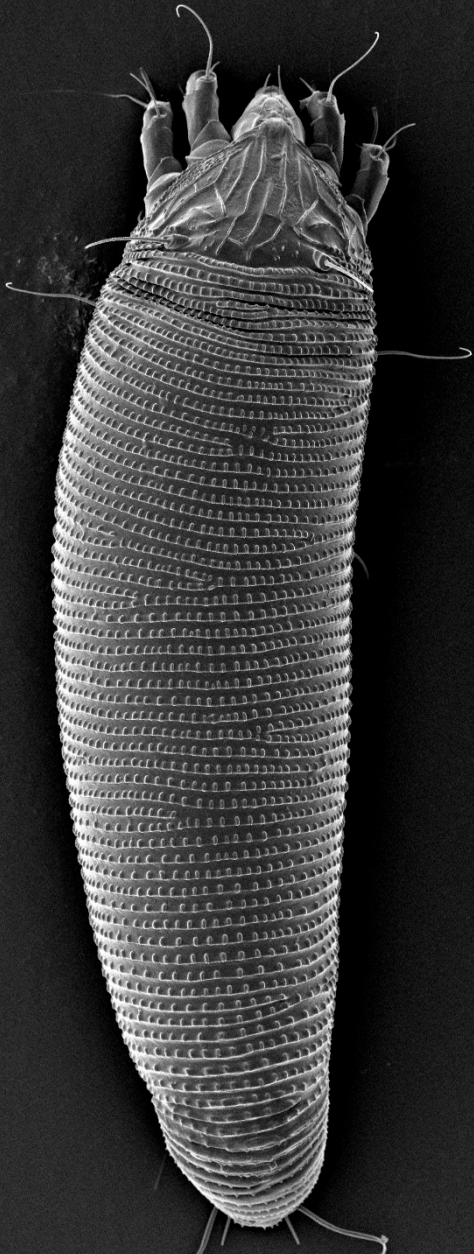
## Acaricides registered for use on Lychee in FL

- Abamectin (Agri-Mek<sup>®</sup> SC)

Rate for lychee: 2.25 - 4.25 Oz

- Bifenazate (Acramite<sup>®</sup> 50WS)

Rate for lychee: 0.75 - 1 Lb





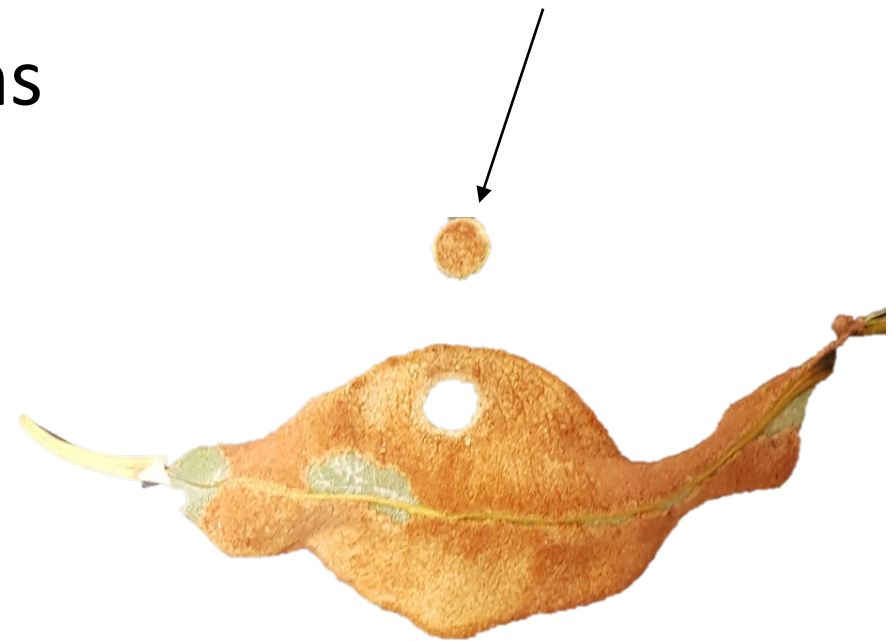
# Complexities of LEM work

- Mites hidden inside erinea
- Large and highly variable populations
- Cannot evaluate efficacy in the traditional way

Area: 19.6 mm<sup>2</sup>

Average of 2,106.5 ± 236  
mites

Meaning 10,750 mites / cm<sup>2</sup>



# Performance of Abamectin to control an existing infestation

Treatments applied on infested leaflets:

1. Abamectin (Agri-Mek<sup>®</sup> SC, 4.25 oz/100 gal)
2. Oil (DyneAmic<sup>®</sup>, 5 pints/100 gal)
3. Abamectin + Oil
4. Water (positive control)
5. Non-sprayed (negative control)





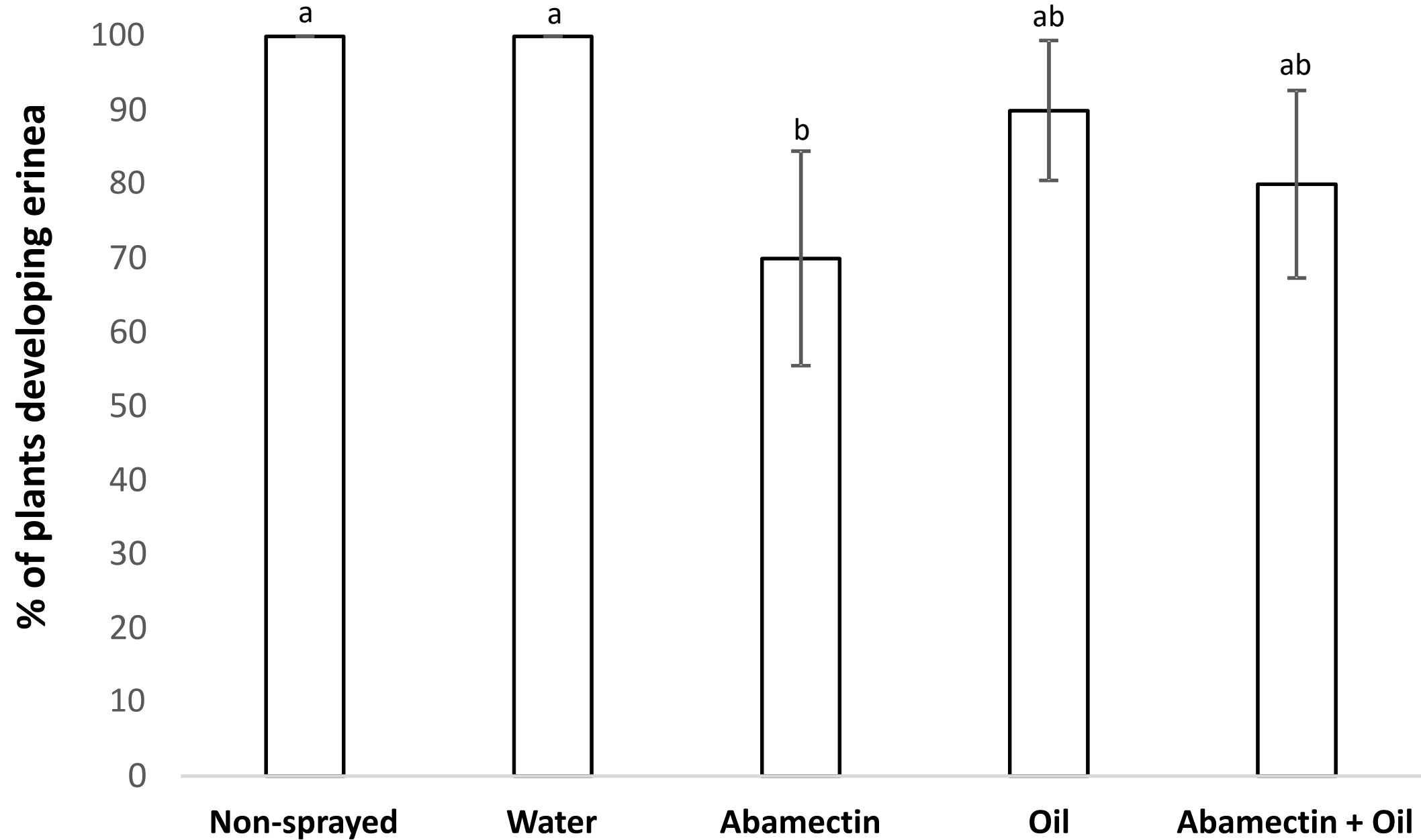
# Performance of Abamectin to protect the new flush

Treatments applied on plants after 30 days:

1. Abamectin (Agri-Mek<sup>®</sup> SC, 4.25 oz/100 gal)
2. Oil (DyneAmic<sup>®</sup>, 5 pints/100 gal)
3. Abamectin + Oil
4. Water (positive control)
5. Non-sprayed (negative control)

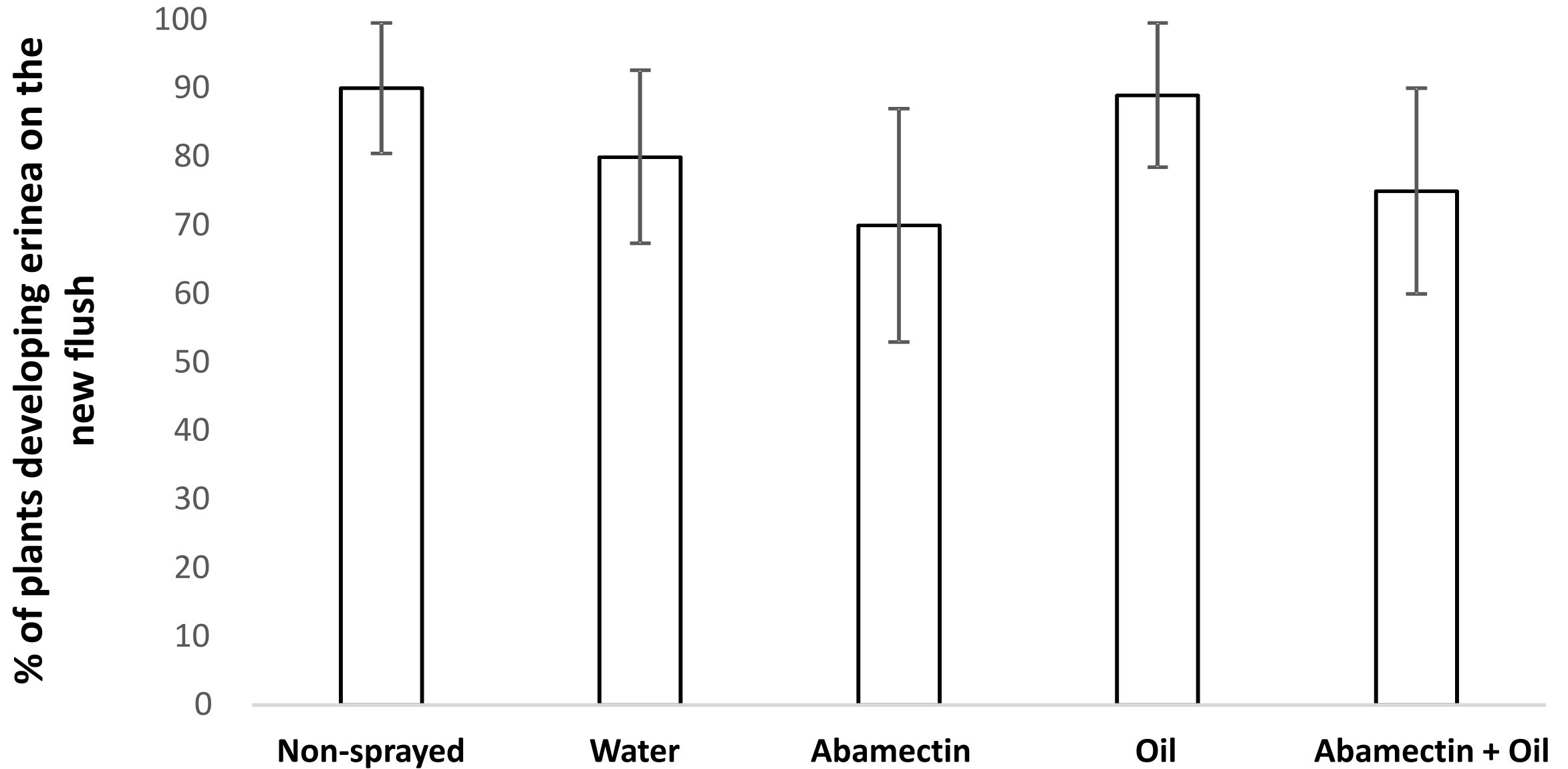


# Performance of Abamectin to control an existing infestation





# Performance of Abamectin to protect the new flush



# Conclusions from trials with Abamectin

- None of the treatments was effective
- Lychee plants receiving leaflets sprayed with abamectin developed erineia later
- Abamectin application could not protect the new flush
- Abamectin alone or with oil cannot control the mite population inside the erineia



# Sulfur phytotoxicity

- Winter trial on new/emerging and mature vegetative growth (Av. temp: 72F; 83% RH; 1.98 inches rain)
- Spring trial on panicles and flowers (Av. Temp: 72F; 82% RH; 1.88 inches rain)
- Summer trial to commence

# Winter trial

- 6 mature “Mauritius” lychee trees
- 10 limbs per tree
- 5 applications at 7 day interval

TRT	Products	Rate per acre*
1	Suffa 1x	5 gal/acre
2	Suffa 2x	10 gal/acre
3	Tracite sulfur 1x	5 pts/acre
4	Tracite sulfur 2x	10 pts/acre
5	Yellow Jacket 1x	30 lbs/acre
6	Yellow Jacket 2x	60 lbs/acre
7	Kolla sulfur 1x	4 pts/acre
8	Kolla sulfur 2x	8 pts/acre
9	Non-treated	NA
10	Non-treated	NA



# Spring trial

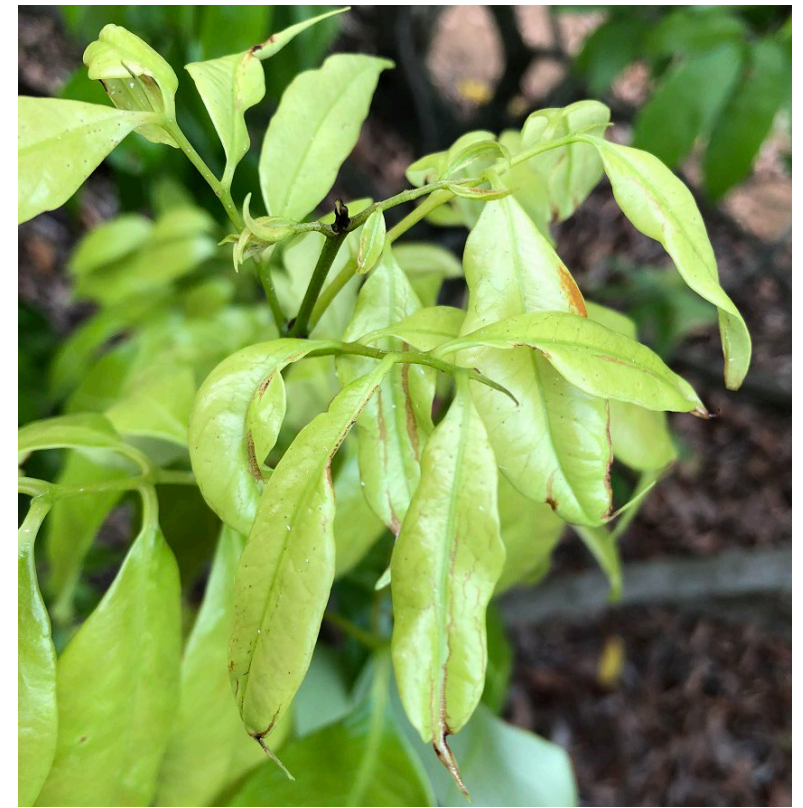
- 8 mature “Mauritius” lychee trees
- 10 limbs per tree
- 6 applications at 7 day interval
- Same treatments applied

Rating	Damage rating
0	No damage to panicle
1	Slight necrosis to panicle
2	Moderate necrosis to panicle
3	Severe necrosis to panicle
4	Necrosed (dead) panicle/abscission
5	No necrosis to open flowers
6	Slight necrosis to open flowers
7	Moderate necrosis to open flowers
8	Severe necrosis to open flowers
9	Necrosed (dead) flowers

# Winter trial



Leaves sprayed to run-off with Suffa at 2X rate, Photo: JHC



Damage Rating 1, Photo: JHC

Little to no phytotoxicity on immature and mature treated foliage

No apparent differences among the sulfur products



# Spring trial

No phytotoxicity on any treated foliage adjacent to the panicles

No phytotoxicity to the panicles was observed

Consistent mass necrosis and/or abscission was not observed



Emerged panicle after 2<sup>nd</sup> spray with Yellow Jacket sulfur 2X rate. No phytotoxicity damage. Photo: JHC



Male stage flowering panicle after 4 Kolla sulfur sprays at 2X rate. No phytotoxicity damage. Photo: JHC

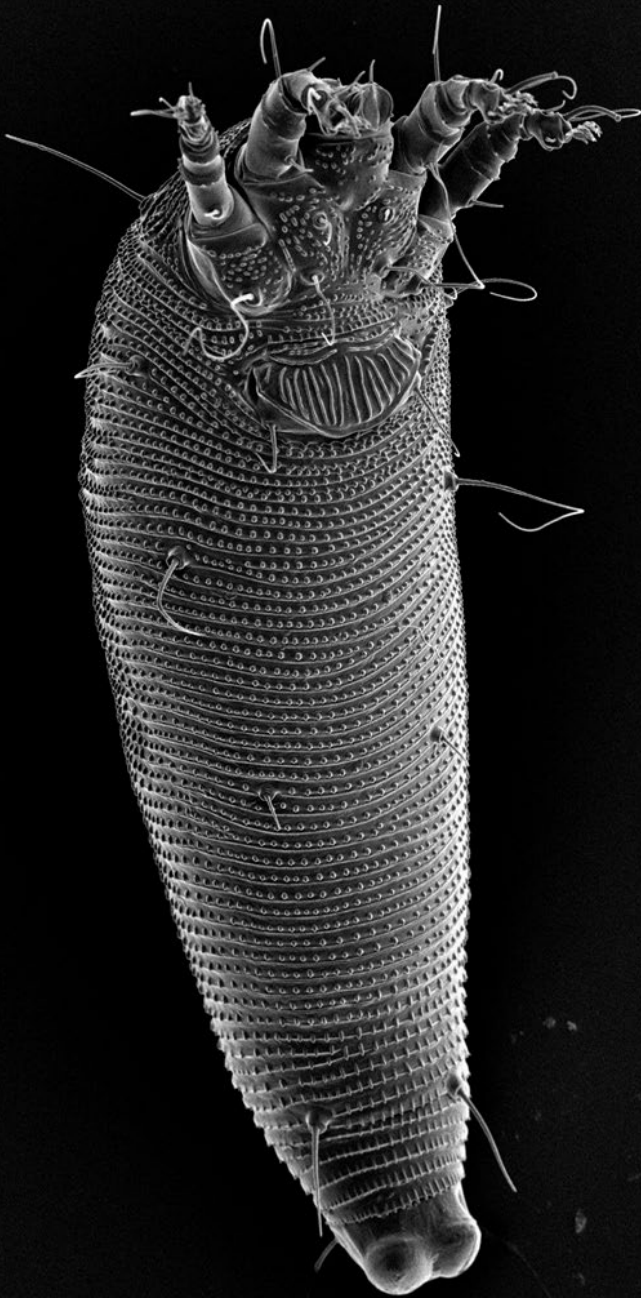


Female stage of flowering panicle after five Suffa at 2X rate. No phytotoxicity damage. Photo: JHC



# General conclusions

- Abamectin does not eliminate LEM and fails to protect new flush
- Preliminary results suggest that Sulfur causes little to no phytotoxicity on Lychee





Thank You!

Questions and  
Discussion



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