

WELCOME TO

CONTROLLING MITES

GrowerTalks' GREENHOUSE EXPERIENCE 2007

Mites

Mites are the KEY pest in many systems.

In the United States, 34% of all pesticides applied to ornamentals were for mite control (1996).

SCOUT

SCOUT SCOUT SCOUT SCOUT SCOUT SCOUT
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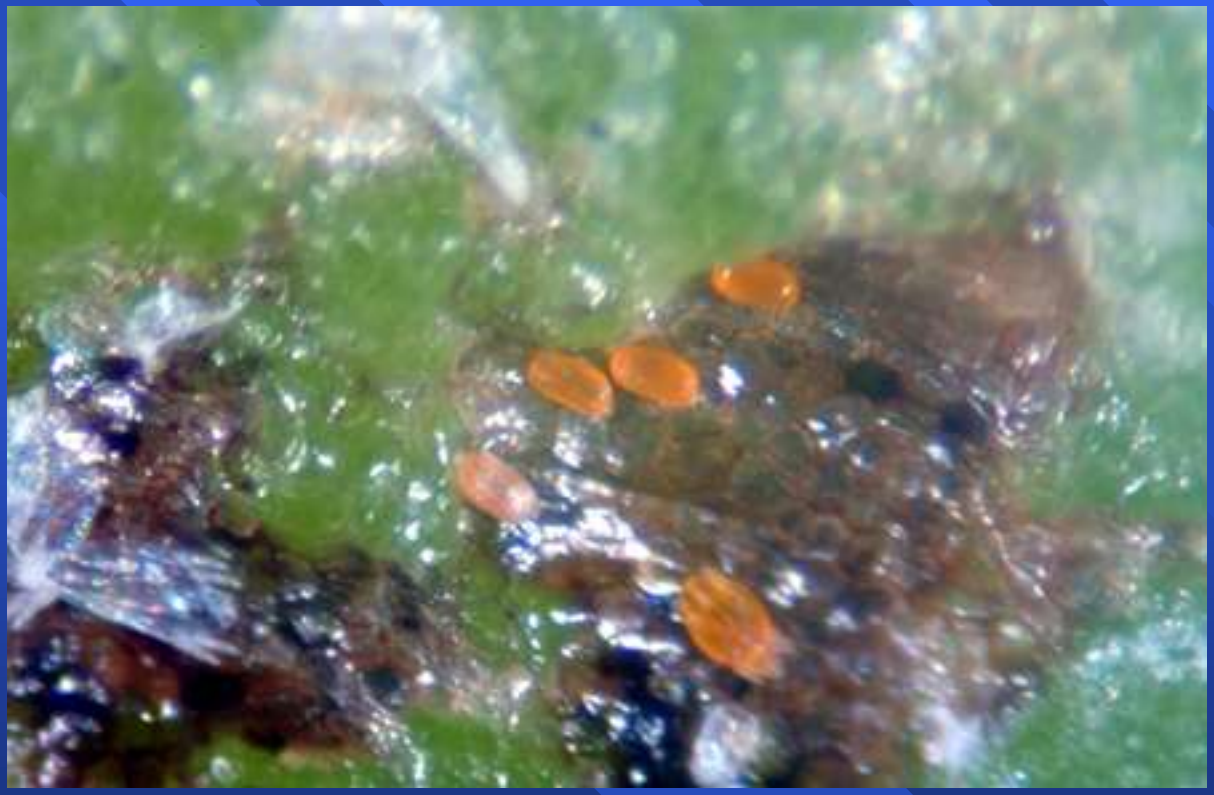
SCOUT SCOUT

Tenuipalpidae

Brevipalpus spp.



CHEMICAL CONTROL

Avid
ProMITE
Sanmite
Sulfur

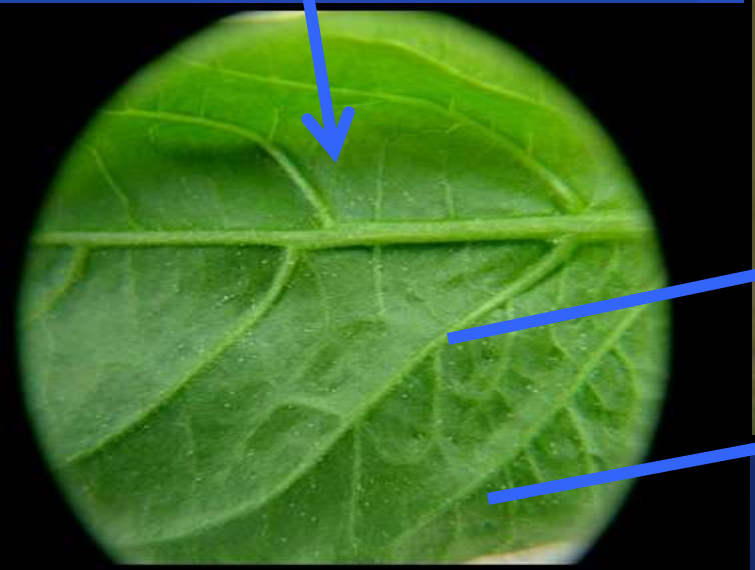
Tarsonemidae

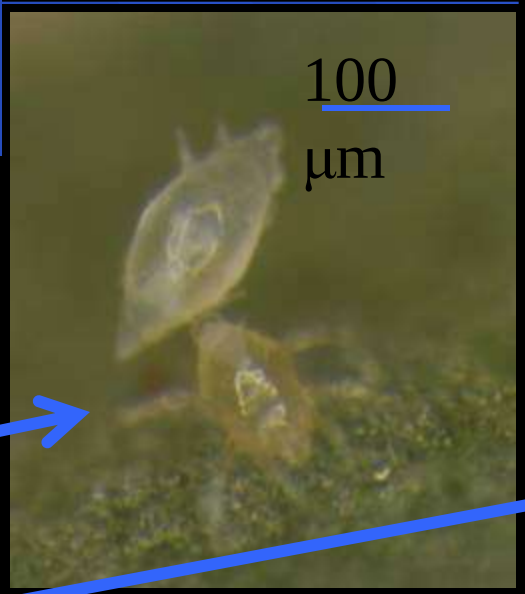
Broad Mite
and
Cyclamen Mite

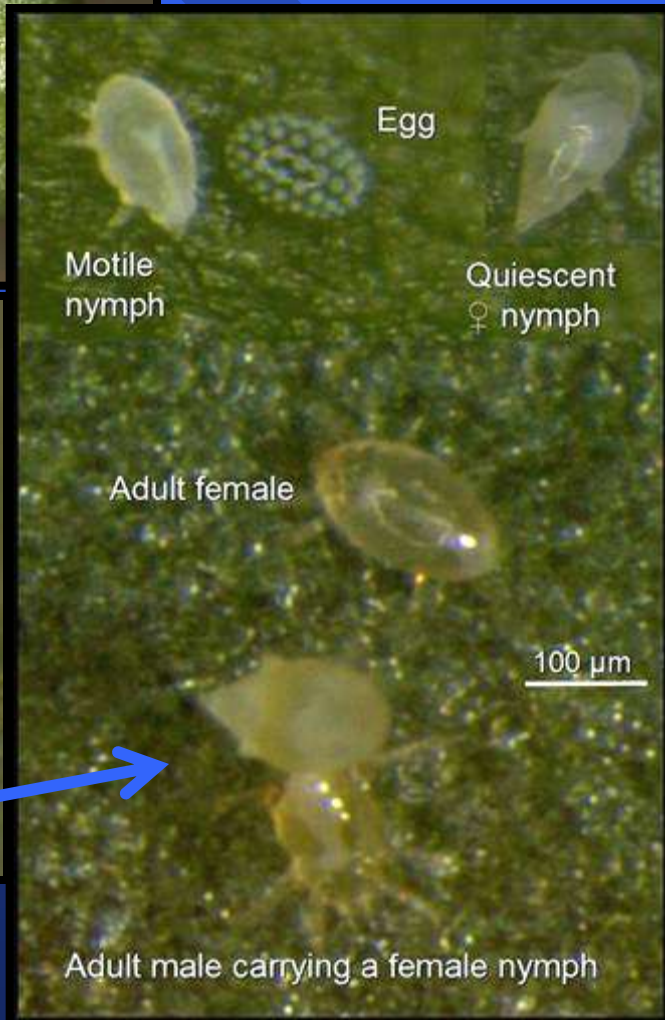
Polyphagotarsonemus latus (Banks), Acari: Tarsonemidae

Photos:
Dr. Jovicich

Egg Motile Nymph ► Quiescent Nymph ► Adult







How do broad mites get into the greenhouse?

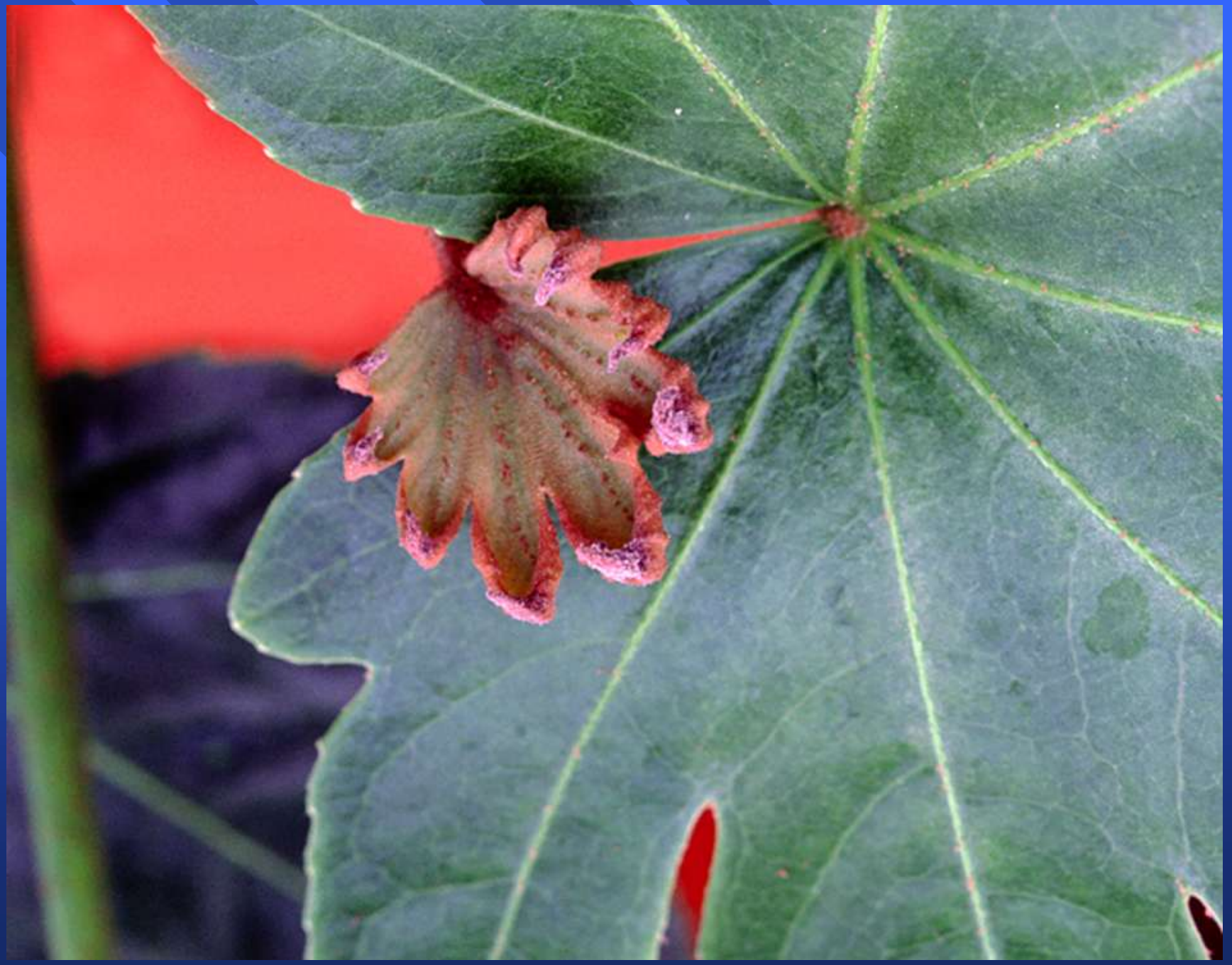
Insects

Air currents

Crawling and contact

Infested transplants

Photos:
Dr. Jovicich



Polyphagotarsonemus latus

Polyphagotarsonemus latus

CHEMICAL CONTROL

Akari
Avid
Pylon
Sanmite
Thiodan

Neoseiulus californicus McGregor (Acari: Phytoseiidae), a predatory mite

- Used for control of two-spotted spider mite (*Tetranychus urticae*)
- Can develop at high temperatures (33 ºC) and low humidity (60% RH)
- Can starve for a long time
- Can survive on pollen, mold, and nectar

- Bindweed (*Convolvulus arvensis*) leaflets (Castagnoli and Falchini, 1993)
- Lime (*Citrus aurantifolia*) seedlings (Peña and Osborne, 1996)

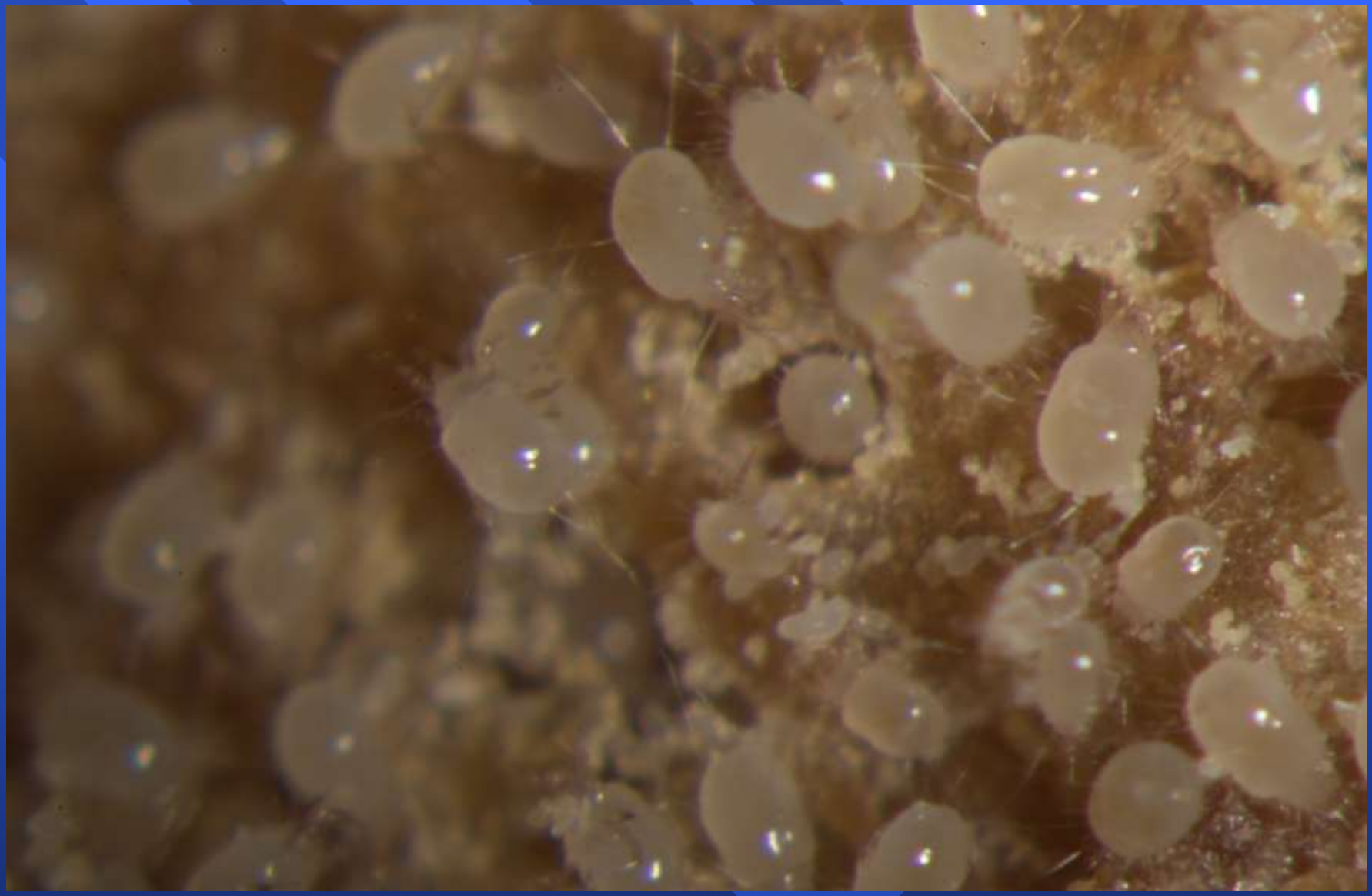
Effective density release ratios **< 15:1**

Photos:
Dr. Jovicich

Banker System

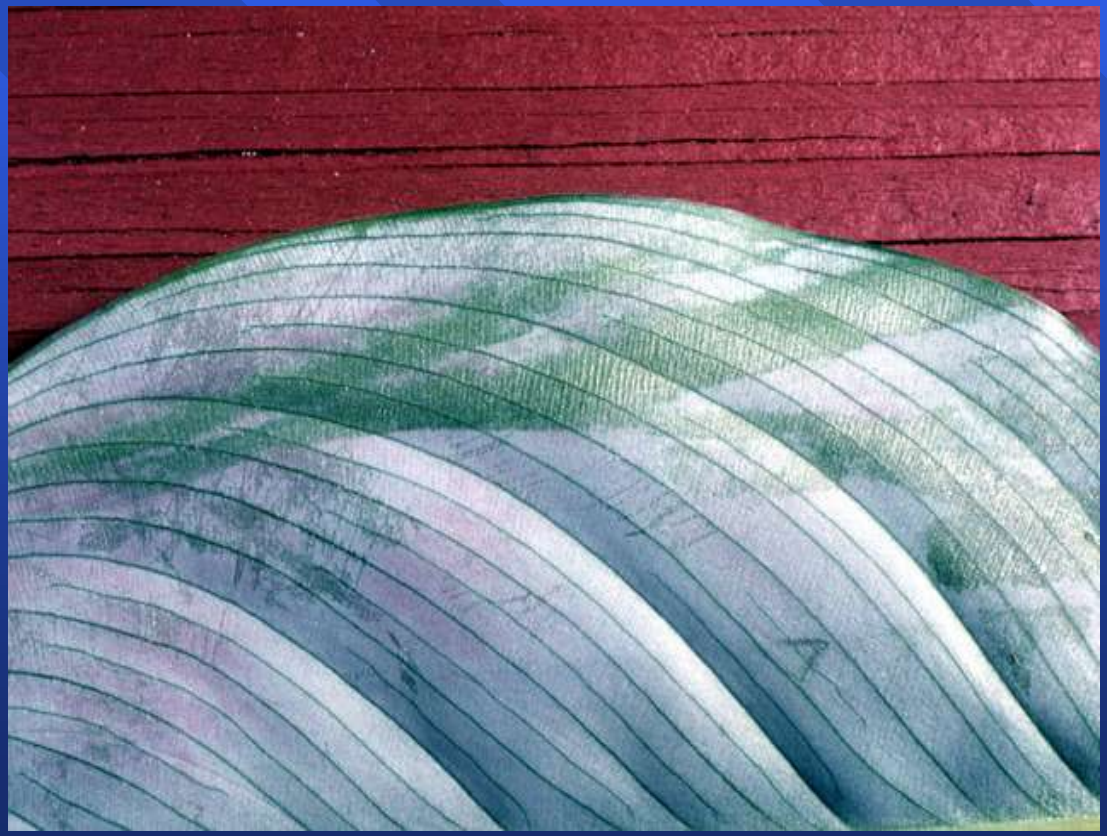
(without a plant)

Amblyseius swirskii



“Food mites “ for predatory mites in the sachet.

Steneotarsonemus furcatus



Steneotarsonemus furcatus

Steneotarsonemus furcatus

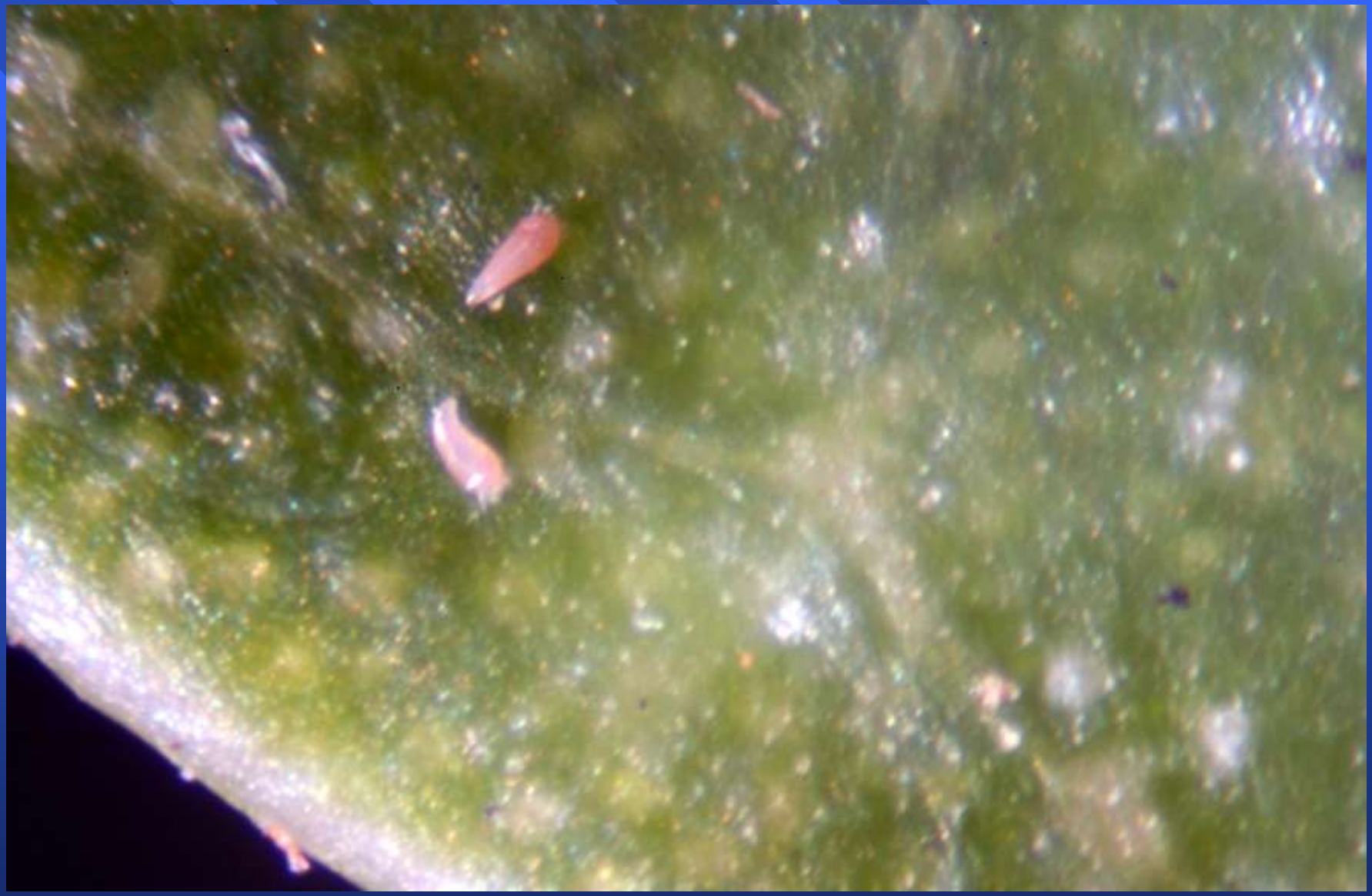
CHEMICAL CONTROL

Avid

Pylon

Thiodan

Eriophyoidea



Purple Tea Mite

Purple Tea Mite

Purple Tea Mite

Jutarus benjaminae

CHEMICAL CONTROL

Adept
Akari
Avid
Pylon

Tetranychidae

Bamboo Mite

Bamboo Mite

Lewis Mite

Eotetranychus lewisi

A known pest since 1950

CHEMICAL CONTROL

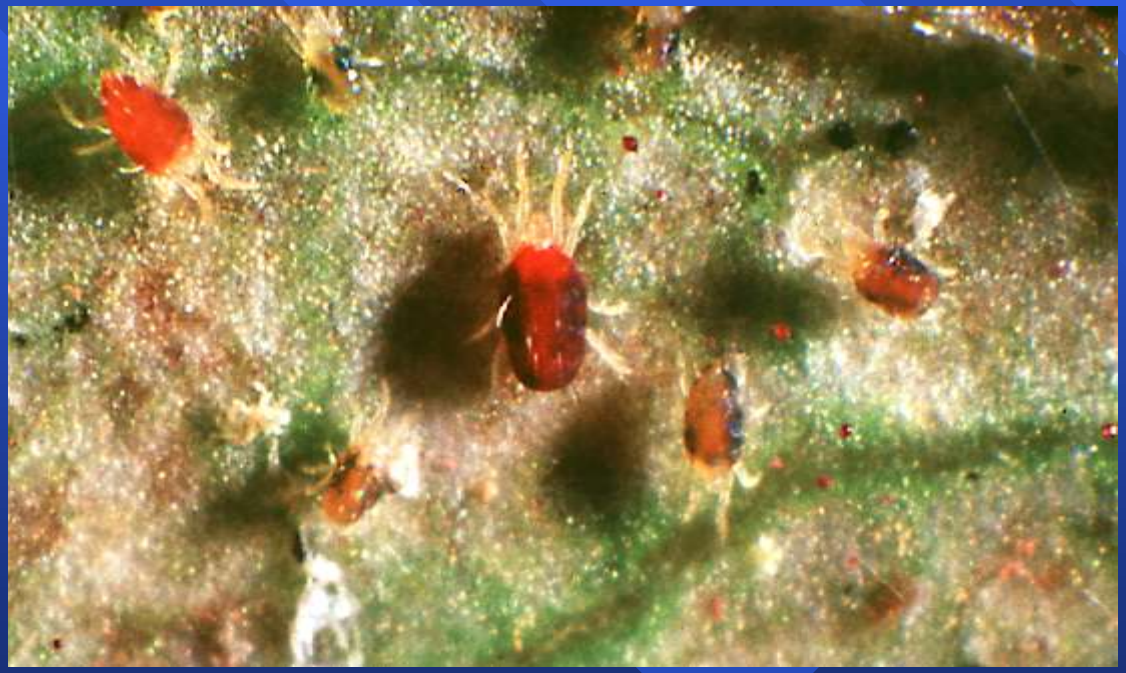
Akari
Avid
Floramite
Akari

TUMID MITE

T. gloveri **= red eggs**

T. tumidus **= white & red eggs**

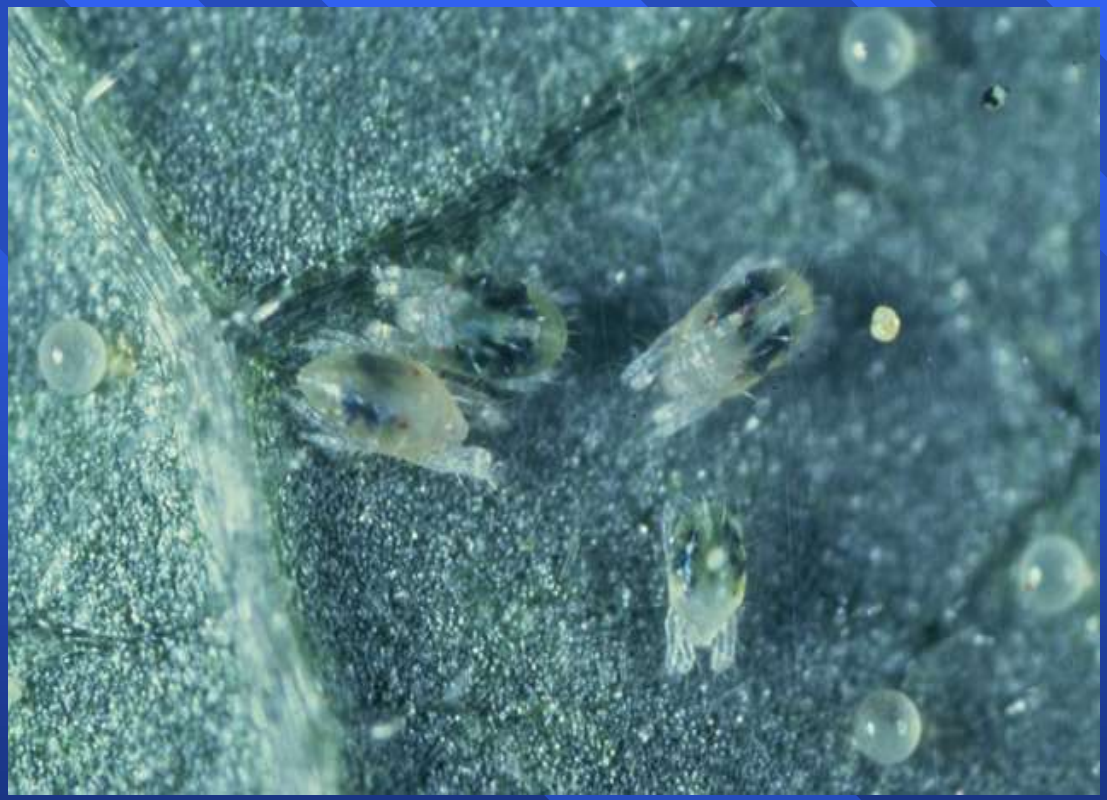
TUMID MITE



GLOVER MITE

Twospotted Spider Mite

Twospotted Spider Mite



CHEMICAL CONTROL for Spider Mites

100% Reliance on Pesticides =

RESISTANCE

RISK OF RESISTANCE

MANAGEMENT OPTION	LOW	MEDIUM	HIGH
Pesticide Rotation	> 2 Modes	2 Modes	1 Mode
Use of Same Mode of Action	Once	More than once	Many times
Infestation Level	Low	Medium	High
Control in Last 3 Cycles	Good	Declining	Poor
IPM System	All Tactics	Pesticide and limited others	Pesticide only

NEW MATERIALS

STEWARDSHIP

PLAN

- Identify All Pesticides Registered for the Pest and Crop
- Determine Plant Safety
- Determine Labeled Frequency
- Determine Other Use Restrictions
- Organize Treatments…
- Don’t Forget Other Pests!

ORDER OF ROTATION

HEAVY POPULATION

1) CONTACT ONLY

2) 7 DAY RESIDUAL

3) GREATER THAN 21

MITICIDES

TRADE NAME	CLASSIFICATION
Akari	21
Avid	6
Conserve	5
Endosulfan	2
Floramite	25
GC-Mite	M
Hexacide	M
Hexygon	10a
Judo	23

MITICIDES

TRADE NAME	CLASSIFICATION
Oils, Soaps	M
Ovation	10a
ProMITE	12
Pylon	13
Pyrethroids	3
Sanmite	21
Shuttle	20
TetraSan	10b
Ultiflora	6

PHYTOTOXICITY

PESTICIDES CAN DAMAGE PLANTS

PHYTOTOXICITY

Biological Control

Predatory Mites

Combinations

Mite control with *Phytoseiulus persimilis* did not become economical for ornamental producers until their use in a large cropping system.

Phytoseiulus persimilus

N. californicus

N. californicus

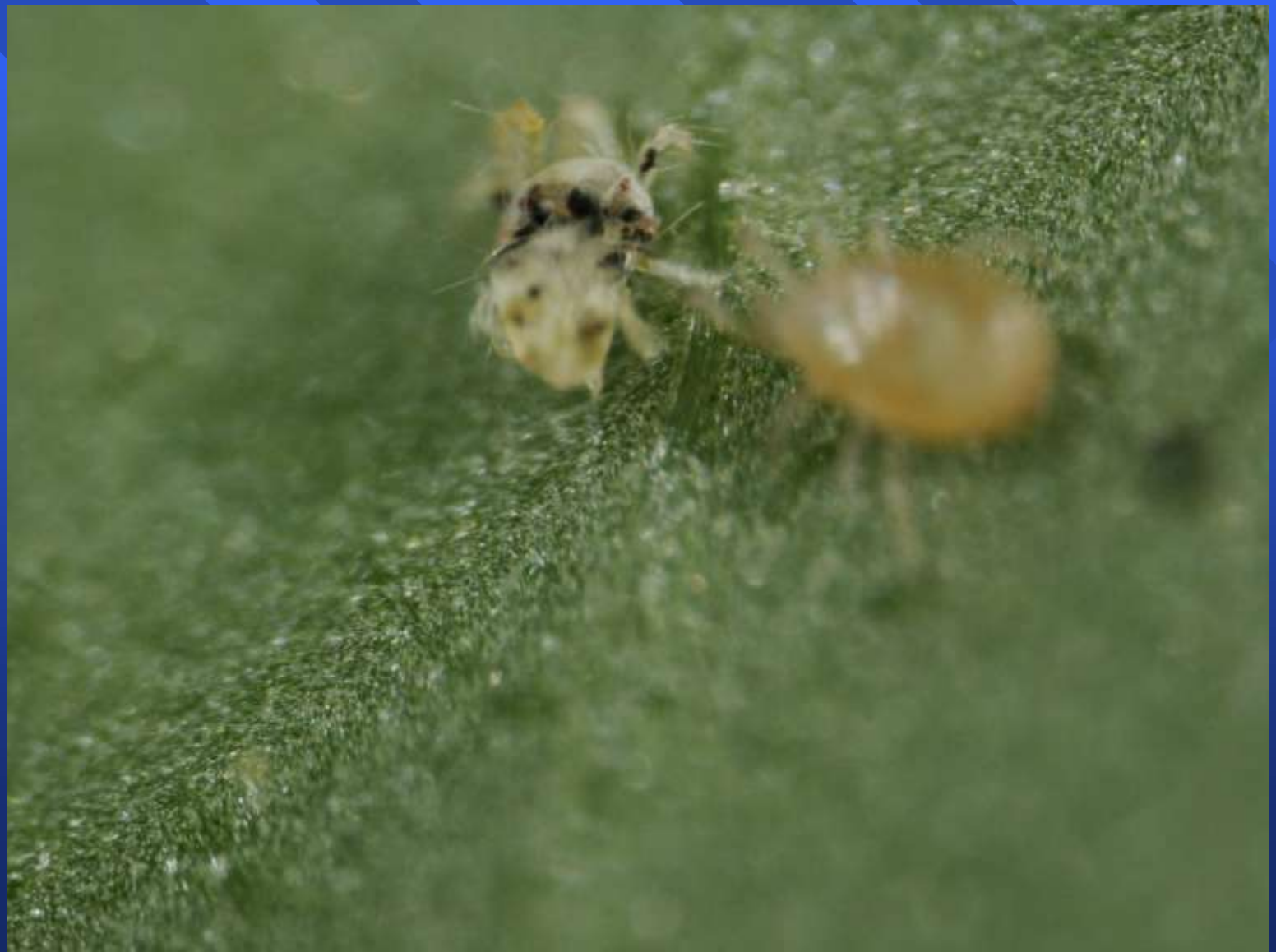
N. californicus

N. californicus

N. californicus

N. californicus

N. californicus



QUALITY CONTROL

AVAILABILITY

Modified Banker Plants

Modified Banker Plants

- Uses alternate hosts
- Uses confined hosts
- Potential to sell entire system
- May be specific to region

Modified Banker Plants

- Used to evaluate quality
- Used to establish natural enemies
- Used to augment natural enemies
- Used to increase numbers

Mite Banker Plants

- Sorghum or corn is grown to produce the Banks grass mite.

Oligonychus pratensis


Natural Enemies
Neoseiulus californicus
Release when cool (55-75°F)
Store at 50°F (2 day max)
2,000 Benemite™ Natural
Neoseiulus californicus
Release when cool (55-75°F)
Store at 50°F (2 day max)
Natural Enemies
Neoseiulus californicus
Release when cool (55-75°F)
Store at 50°F (2 day max)