

# Spider Mites

Acari: Tetranychidae



Photograph by Eric Day



Photograph by Ward Strong



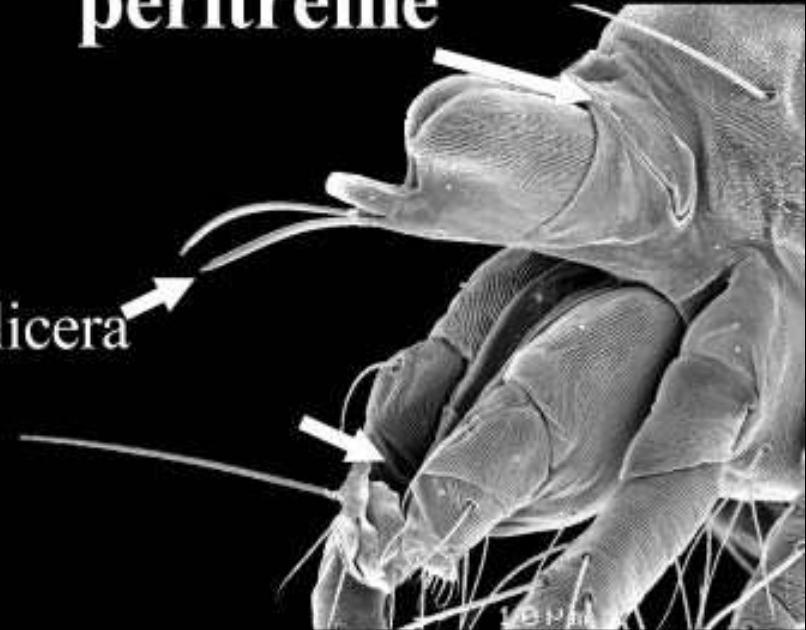
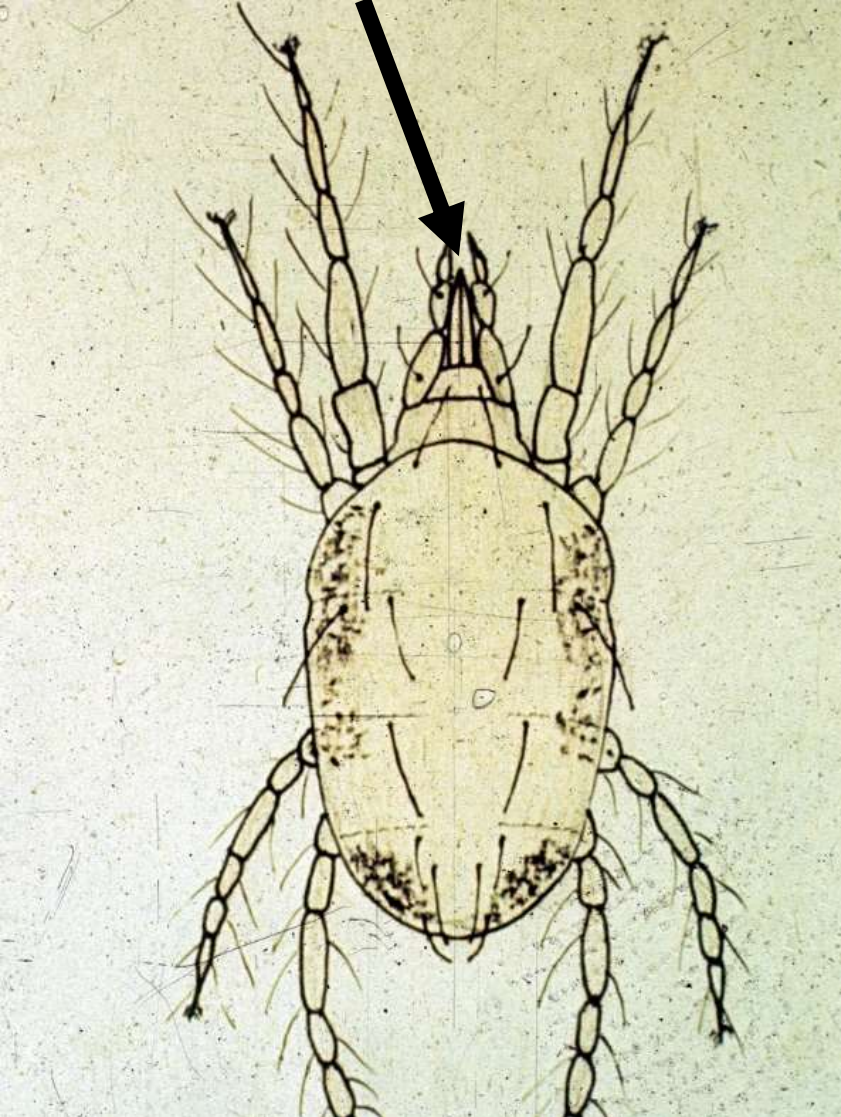
**Spider mites pierce cells with their whip-like chelicerae**

# Spider Mite

**Prodorsum**

**peritreme**

**chelicera**



**Typically they will destroy 1 to 2 dozen cells at each feeding site – then move on**













Each feeding site produces a small area of dead cells – a type of **stippling injury**





**With high mite populations, the stippling injuries may cover much of the leaf area.**





A **generalized leaf bronzing** is a common symptom of spider mite infestations of fruit trees





**On evergreens the effect of spider mite injury is to make the foliage appear duller, more gray**

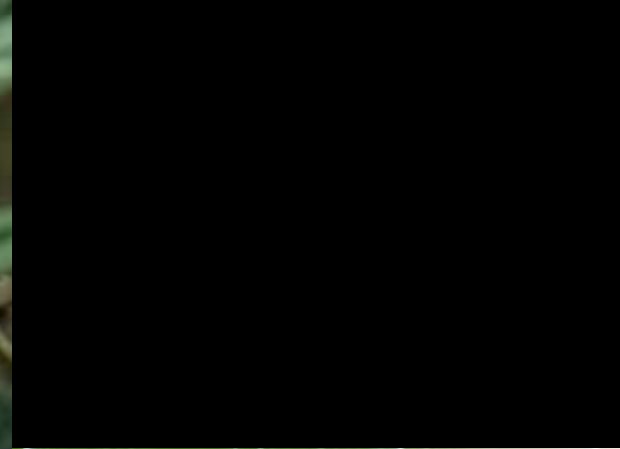




**Webbing may be produced by spider mites and becomes visible when they are in high populations**







**Silk can protect the spider mites and provide pathways for movement across a plant.**



# Life Stages of the Twospotted Spider Mite



egg



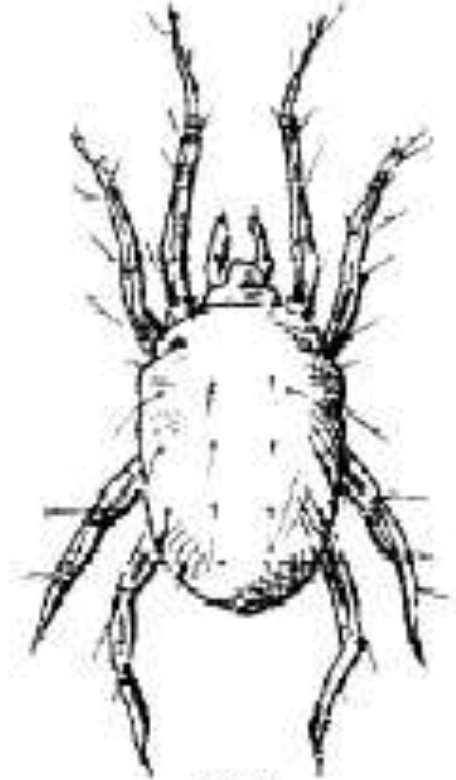
larva



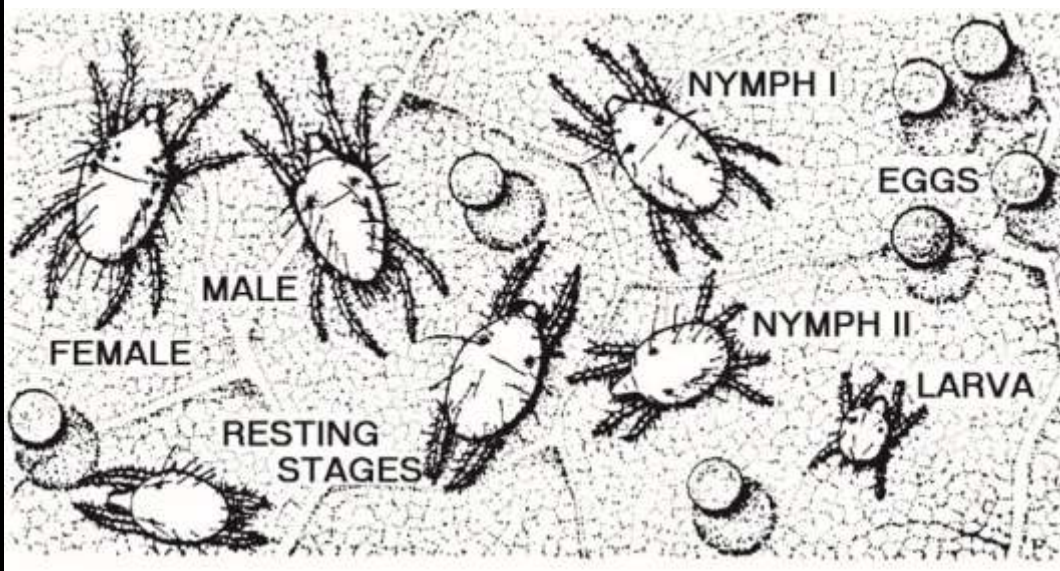
protonymph



deutonymph



adult

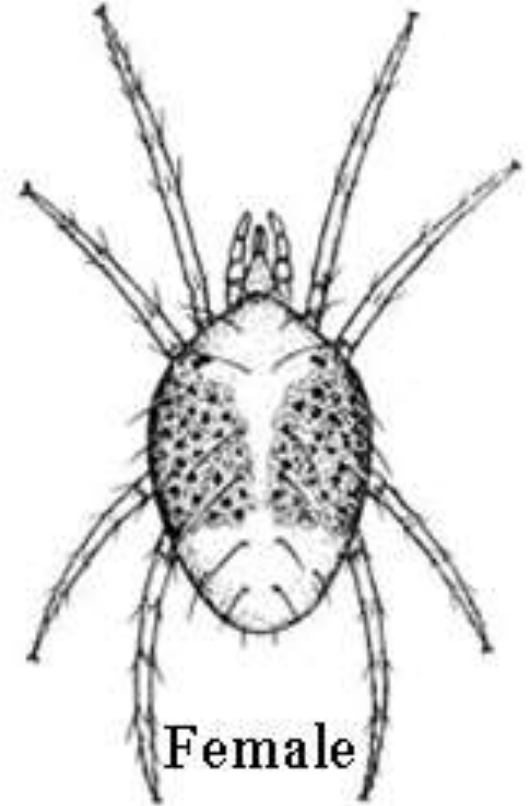




Male spider mites are smaller than females and have an abdomen that tapers



Male



Female







**Female spider mite with eggs**



**Male spider mite**

**Photographs courtesy of  
David Shetlar**







**Old cast skins and egg shells are good diagnostics**







Photograph by David Shetlar, Ohio State University

**Mites can disperse  
some distance by  
being wind blown –  
(ballooning)**





# Color change in mites going into dormancy (Diapause)







**Green summer form  
on leaves**

**Orange-red  
overwintering form  
around buds**

**Changes in color can  
occur during the year**





**Some species spend the winter in the egg stage**





**Reddish crust on bark of aspen?**





Massed eggs of the **brown mite** (*Bryobia rubrioculus*)







**Twospotted spider mite**  
*Tetranychus urticae*





# Honeylocust Spider Mite

*Platytetranychus gleditsiae*







**Conifer spider mites**





# Spruce Spider Mite

Webbing on  
needles



Photograph by Petr Kapitola



Photograph by Bruce Watt

Adult and discarded skins

Eggs on twigs  
and needles



Photograph by  
Petra Kapitola





Mites on conifers  
are “cool-  
season” species

**Peak activity of mites - fall, spring**

**Peak expression of symptoms -  
summer**





# Spider Mite Management

- **Monitor high risk plants**
- **Minimize drought stress**
- **Increase humidity**
- **Take particular care with pesticide use on mite sensitive plants**





**Sample plants to  
detect potential  
outbreaks**





**Detect symptoms  
at this point**

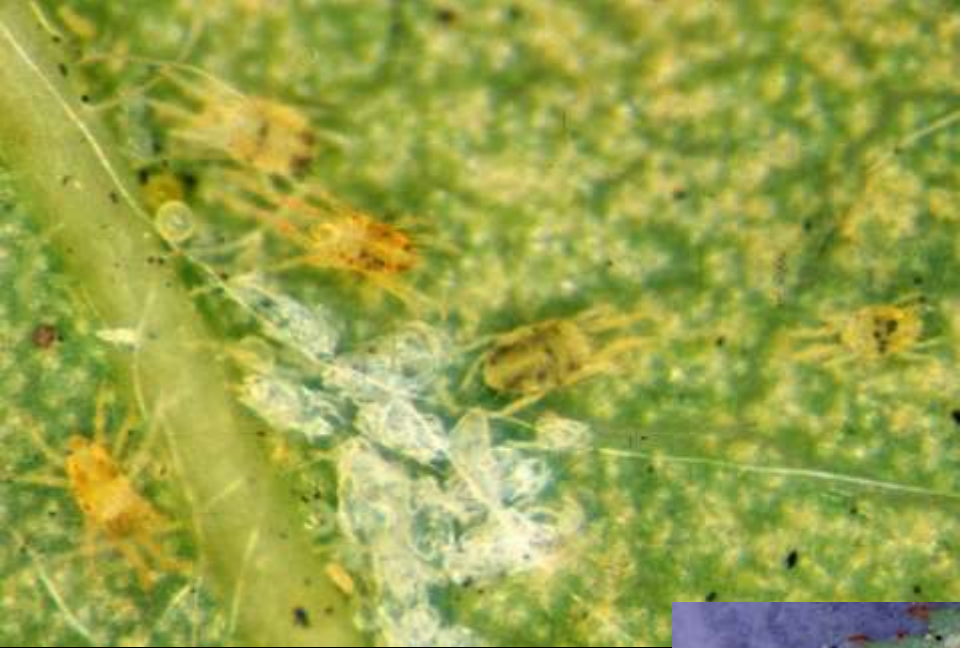
**Before it progresses to this..**



**...and then this.**



**Old cast skins and egg shells are good diagnostics**





# **Interactions of Drought and Spider Mites**

**Drought-stressed plants may be more nutritionally suitable hosts.**

**Leaf surface temperatures increase on drought stressed plants**



# **Interactions of Dry Air/Aridity and Spider Mites**

- **Dry air allows spider mites to more rapidly evaporate waste fluid**
- **Dry air is often seriously stressful to spider mite predators**



Minute pirate bug (feeding on thrips)



Predatory thrips

## Natural enemies of spider mites

Predatory mite feeding on spider mite



"Spider mite destroyer" lady beetles



**Spider Mite Predators/Predatory Mites.** Several species of commercially available predatory mites (Phytoseiidae family) appear to have some particular applications particularly for greenhouse and interiorscape use where humidity is adequate. Each predatory mite species has a range of temperature and humidity under which they are most efficient, and some require humidity conditions rarely reached in arid areas of the country. The more experienced suppliers/producers can provide consultation as to appropriate species to consider.

One species, *Amblyseius swirskii*, has more generalized habits and has been used to control both spider mites and thrips.

Sources (*Neoseiulus* (= *Amblyseius*) *californicus*): 4, 6, 7, 9, 10, 11, 12, 17, 19, 20, 22, 24, 26, 27, 30, 31, 32, 33, 34, 35

Sources (*Neoseiulus* (= *Amblyseius*) *fallacis*): 4, 6, 9, 10, 12, 18, 19, 21, 24, 27, 30, 31, 32, 33, 34

Sources (*Amblyseius andersoni*): 4, 6, 7, 12, 19, 32, 33, 34, 35

Sources (*Galendromus* (= *Mesoseiulus*, = *Metaseiulus*) *occidentalis*): 4, 9, 10, 12, 19, 22, 24, 27, 31, 34

Sources (*Mesoseiulus* (= *Phytoseiulus*) *longipes*): 4, 9, 10, 12, 17, 19, 21, 24, 27, 31, 34

Sources (*Phytoseiulus persimilis*): 4, 6, 7, 9, 10, 11, 12, 16, 17, 18, 19, 20, 21, 22, 24, 25, 26, 27, 30, 31, 32, 33, 34, 35

Sources (*Amblyseius* (= *Typhlodromips*) *swirskii*): 4, 6, 7, 10, 11, 12, 18, 19, 20, 21, 25, 26, 30, 32, 33, 34, 35

Sources (Unspecified predatory mites and/or Mixtures): 2, 5, 10, 17, 19, 21, 23, 27, 29, 30, 31



**Predatory Mite: *Galendromus occidentalis***

**Optimal environmental conditions**

**80-100 degrees F**

**> 50% RH**



**Predatory Mite: *Mesoseiulus longipes***

**Can only tolerate the very low humidity of 40% when the temperature is 70°F.**

***Requires increasing humidity as temperature rises.***





**Drought stress greatly contributes to spider mite problems**







**Another example.  
Honeylocust spider mites  
primarily are pests on  
street trees in Colorado.**





# Honeylocust spider mite in Millenium Park - Chicago













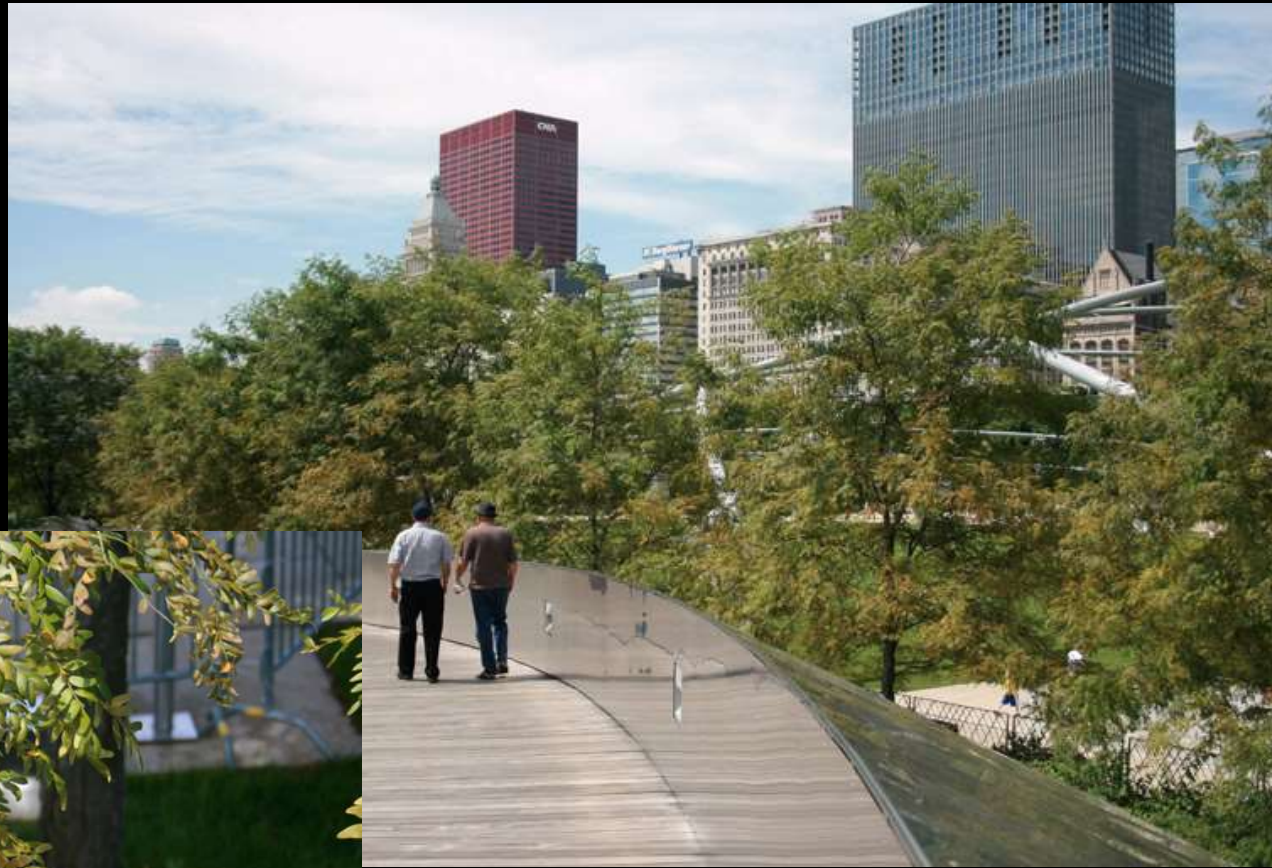


**Los Angeles Performing Arts Center – a Frank Gehry designed structure**





# “Gehry Building Syndrome”





# Rainfall and irrigation effects on spider mites













Use of many pesticides can aggravate ('flare') problems with spider mites







# Hi-Yield<sup>™</sup>

## 55%

### Malathion SPRAY



Aphid



Bagworm



Spider Mite



Weevil



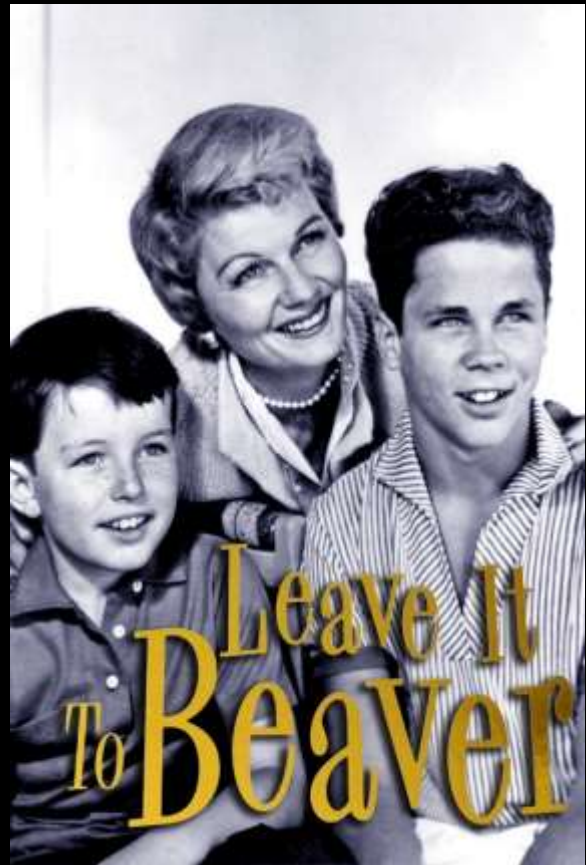
Whitefly

- For Outdoor Garden Use
- Controls Aphids, Bagworms and Many Other Listed Insects.
- For use on listed outdoor ornamental herbaceous plants, ornamental non-flowering plants, ornamental woody shrubs, vegetables, and fruit trees.
- 1 1/2 Teaspoons Makes 1 Gallon Of Spray.

**ACTIVE INGREDIENTS**  
 Methyl 1,1-Dimethyl 4-thiohydantoinyl  
 methyl phosphorothioate ..... 55.0%  
**OTHER INGREDIENTS** ..... 45.0%  
**TOTAL** ..... 100.0%  
 \*Contains Inert Active Petroleum Derivative Solvents  
 This product contains 5 pounds of Malathion per gallon.

**KEEP OUT OF REACH OF CHILDREN**  
**CAUTION**  
 See Back/Other Label Panel  
 for Additional  
 Precautionary Statements

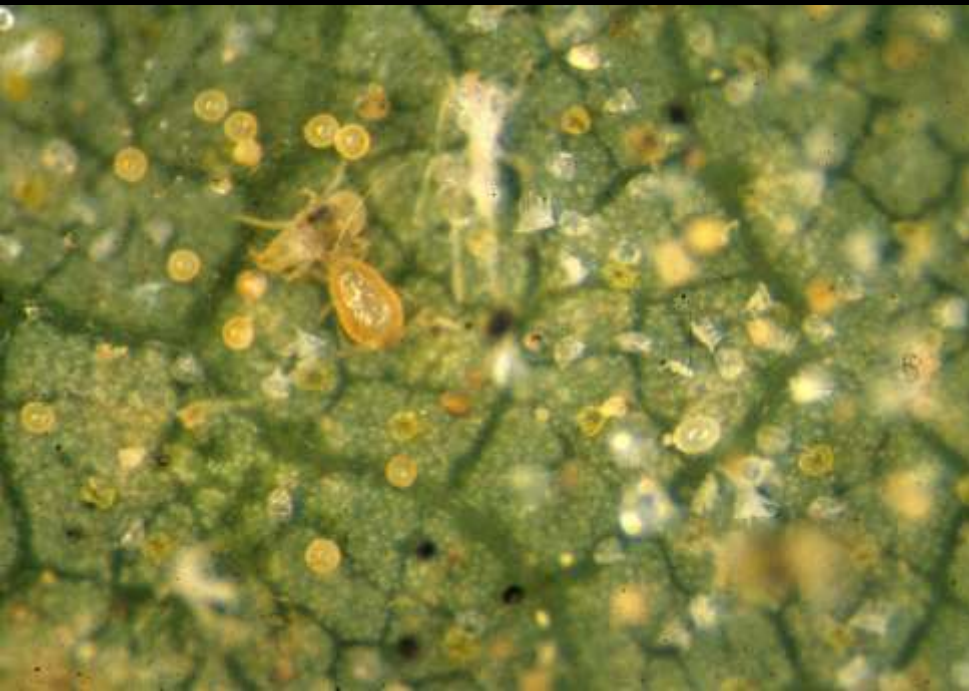
**NET CONTENTS ONE QUART (32 Fl. Ozs.)**







**Most insecticides will kill predators of spider mites. If they are ineffective against spider mites, then populations often increase**



# Mite Control Products – Commercial Applicators

- **Least disruptive of natural enemies**
  - Floramite (bifenazate)
  - TetraSan (extoxazole)
  - Hexygon (hexythiazox)
  - **Horticultural oils\***
- **Moderately disruptive of natural enemies**
  - **Forbid (spiromesifan)**
  - **Avid (abamectin)**
- **Highly destructive to natural enemies**
  - **All pyrethroids (Onyx, Talstar, Scimitar...)\*\***

\* Many horticultural oils are available through retail outlets.

\*\* Bifenthrin containing insecticides are available from retail outlets and have some mite activity



The only over-the counter product that I would recommend for spider mites

## Horticultural Oils (Petroleum/Paraffinic Derived)



# Spider Mite Management

- **Monitor high risk plants**
- **Minimize drought stress**
- **Increase humidity**
- **Take particular care with pesticide use on mite sensitive plants**



# Turfgrass Mites





# Clover Mite

*Bryobia praetiosa*







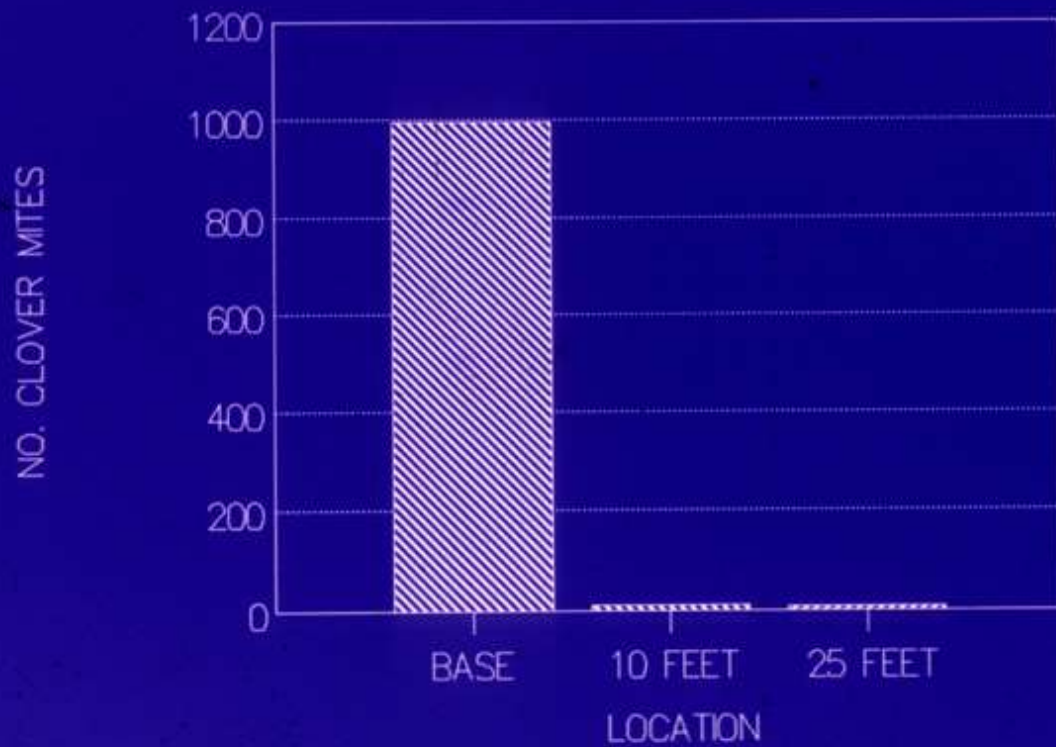
**Clover Mite Activity  
is Concentrated  
around Buildings,  
Trees, Shrubs and  
Other Aboveground  
Objects**





## CLOVER MITE POPULATIONS

### SITE 2





## Clover mite activity – Late February through Late April



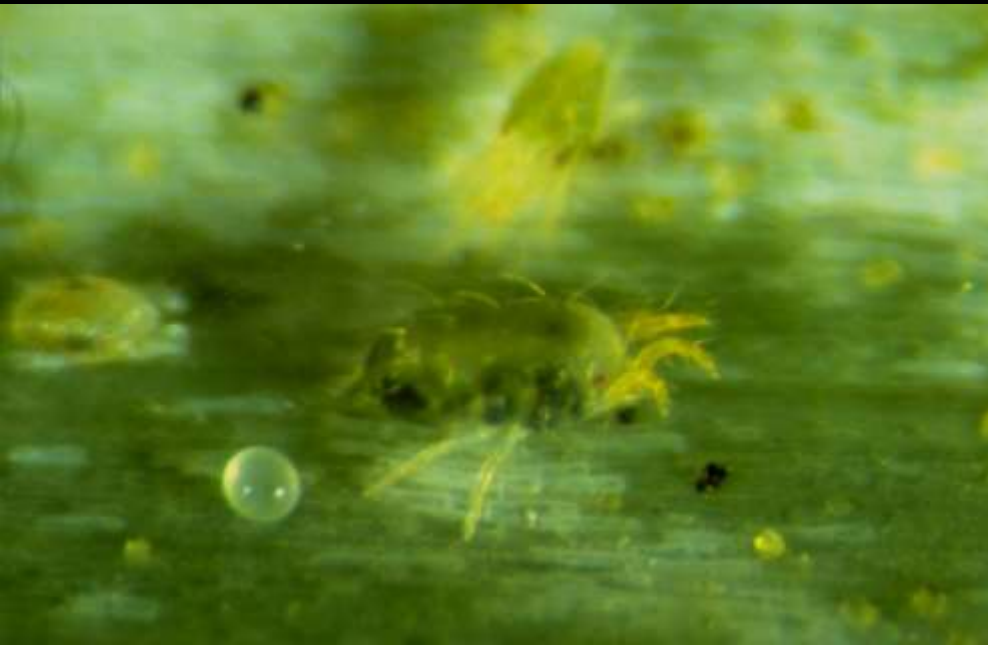


**Clover mites  
often  
accidentally  
enter buildings  
during warm  
days in spring**





# Banks Grass Mites





# Injury by Banks Grass Mites









**Turf – Water = Mites**  
**in spring**

