

What's the Frequency Lewis? Decoding Lewis Mite in Strawberry

Mark Bolda

UCCE, Santa Cruz County

Introduction

- Summarizing the Issue
- Identification of the Lewis mite
- Basic biology of the Lewis mite
- Management of the Lewis mite

- A brief discourse on the “carmine mite”

Economic damage from Lewis mite

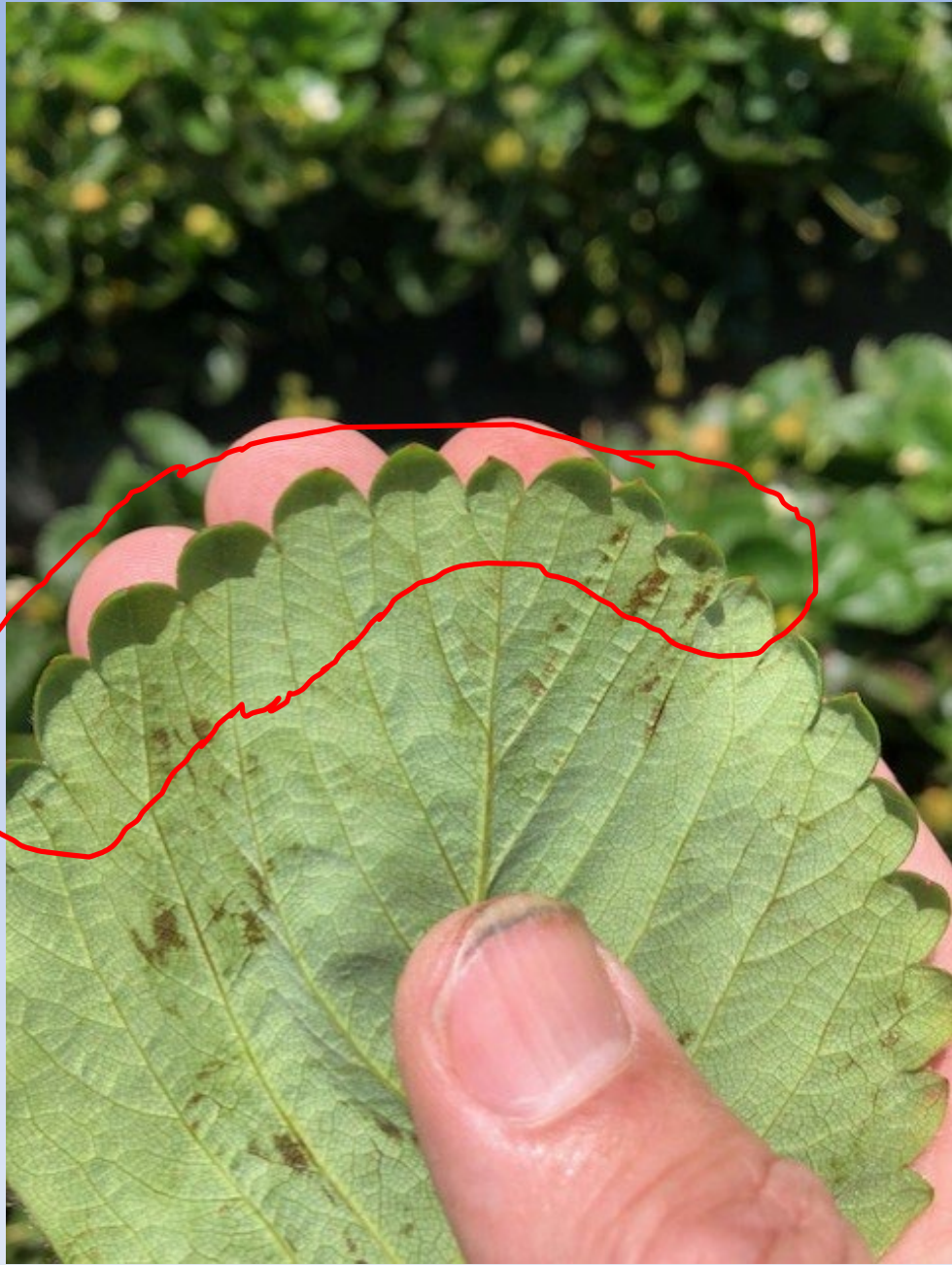
- Generally mixed in with twospot
- Not apparently responsive to the same materials and predators as twospot.
- Showed up in Ventura some ten years ago, first appearance in Watsonville- Salinas three years.

Damage is purple + dying leaves and somewhat different from that common to twospot



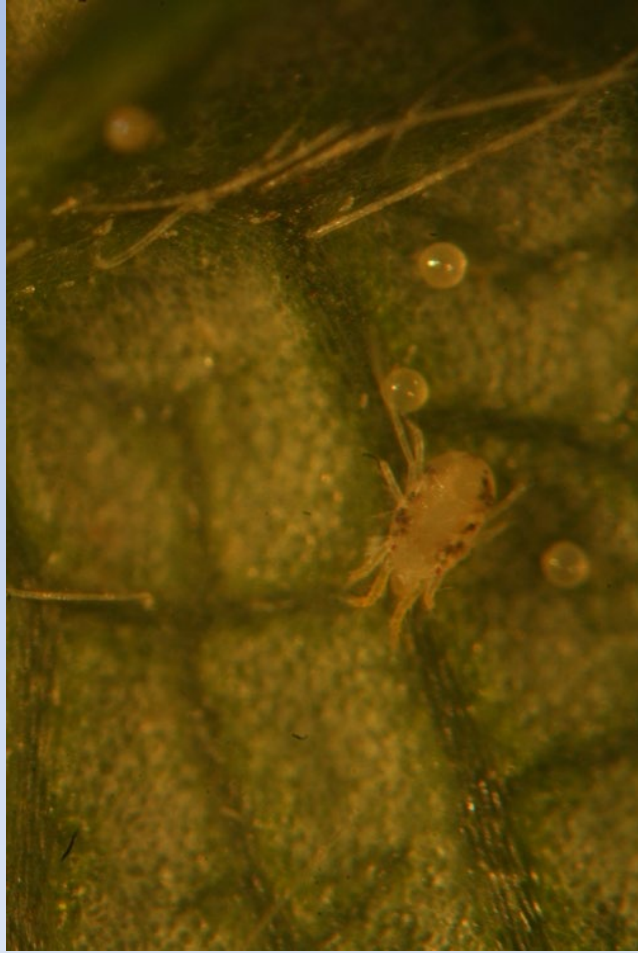
Biology

- Has one larval and two nymphal stages prior to the adult, larvae emerge some three days after eggs are laid.
- Colonies often found at leaf edges or veins.
- Full lifecycle takes about 14 days at 77°F (UC IPM), less at warmer temperatures. Twospot full lifecycle takes about 5 days at 75°F (U of I).
- In the mild winter coastal growing regions of California, it is unusual for a large percentage of mites to become dormant; instead they continue to grow and lay eggs, although at a slower pace during the winter months than in summer.



Identification

- Adults and eggs slightly smaller than two spot.
- Row of spots down the side, rather than one large spot on each side as with twospot.

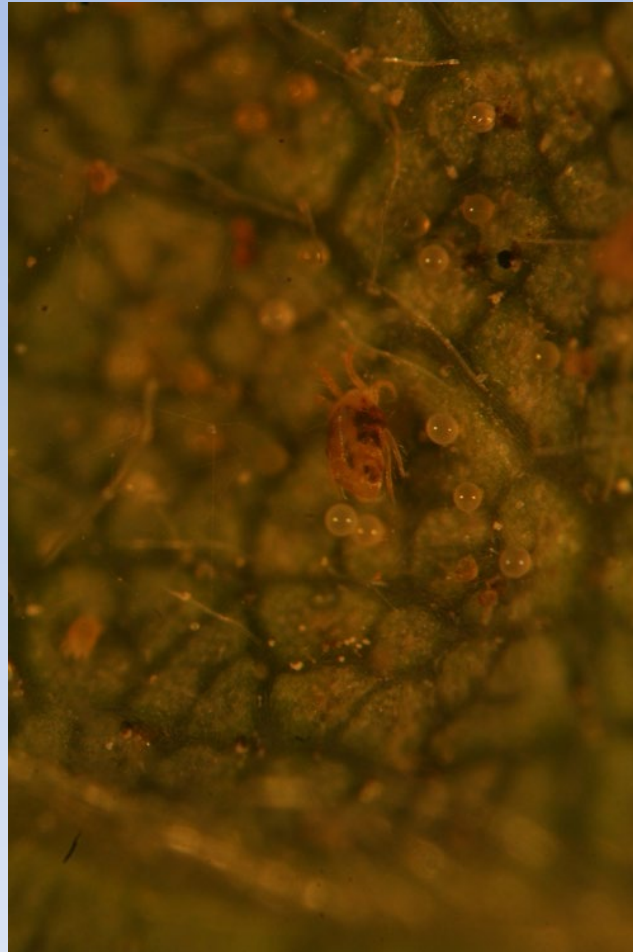




Twospot in blue, Lewis in red



Test Yourself!



List of Treatments

Treatment	Rate/A	Notes
Oberon	16 fl oz	-
Vestis	13 fl oz	Applied twice
Aza-Direct	32 fl oz	-
Agrimek	16 fl oz	Applied twice with 0.1 % Dyne-namic
Untreated check	-	-
Nealta	13.5 fl oz	-

First application on 2/18 and second done on 2/24.

Water carrier rate per acre 100 gal



PRECISION
LABORATORIES
Results Expected™



Vestis™

Spreader / Wetting Agent

PRINCIPAL FUNCTIONING AGENTS
Methylated siloxanes and polyvinylpyrrolidone
(and nonoxonyl ether)

All ingredients are approved for use under 40 CFR 180
CA Reg. No. 9249-00003AA WA Reg. No. 2349-00005



For
Mixture
Admix

KEEP OUT OF REACH OF CHILDREN
WARNING



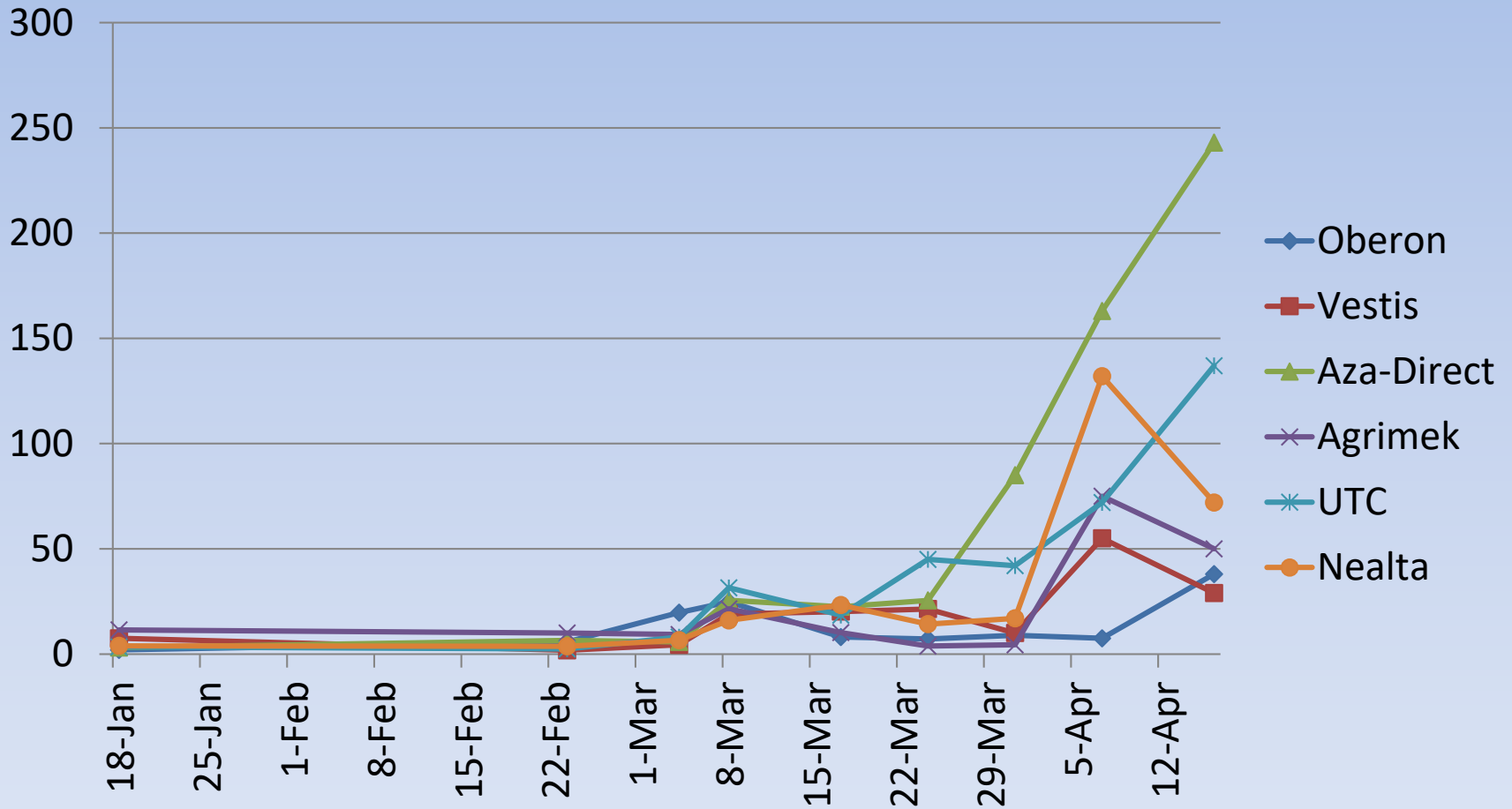
Test Plot – Highway 129 in Watsonville



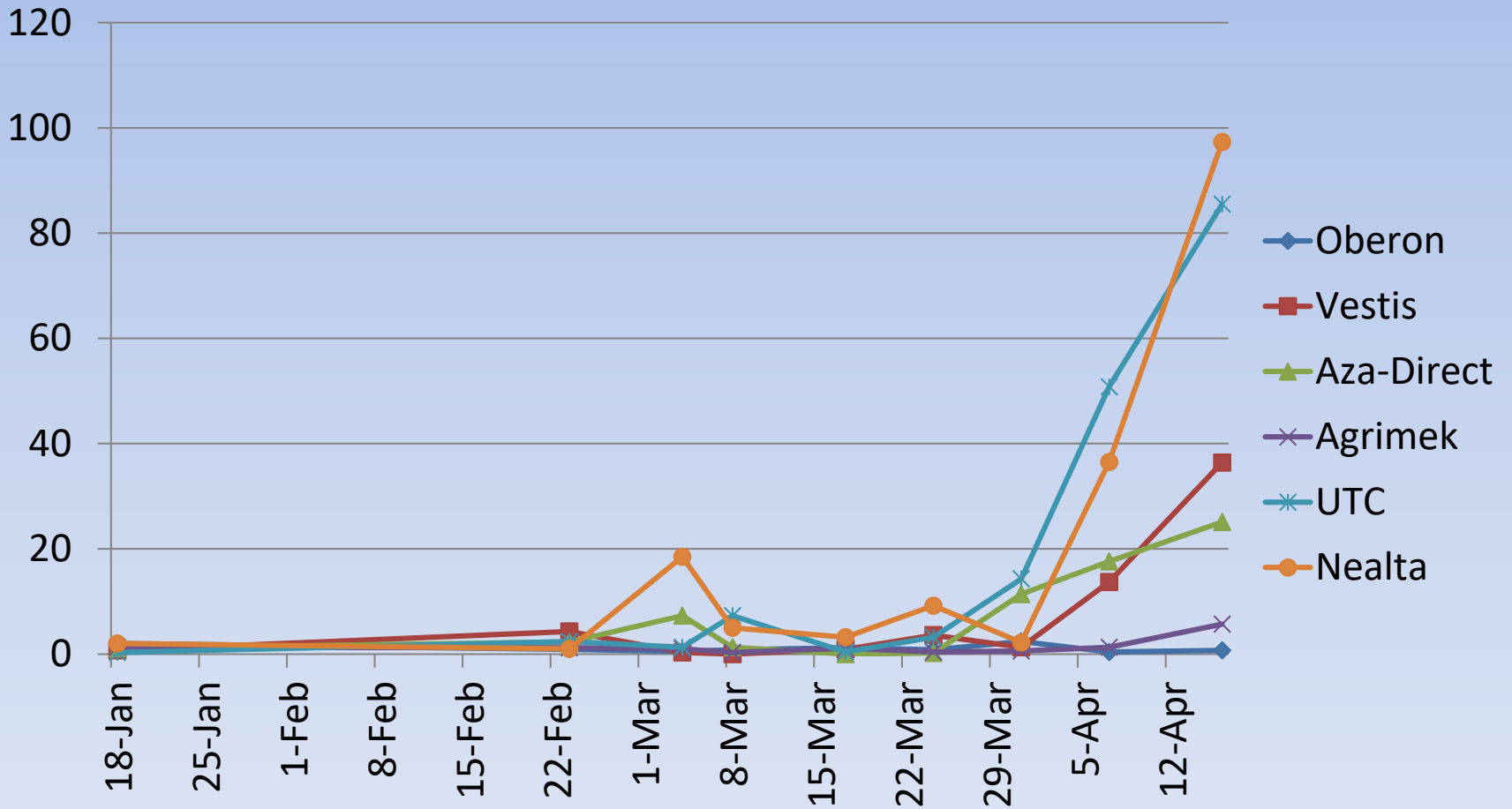
Evaluation

- Ten leaves per treatment replicate collected and evaluated under dissecting scope.
- Twospotted spider mite adults, Lewis mite adults, eggs, *P. persimilis* adults, and *P. persimilis* eggs counted.
- Dates of evaluation: Jan 18, 25, Feb 8, 15, 22, Mar 1, 8, 15, 22, 29, Apr 5 and 12.

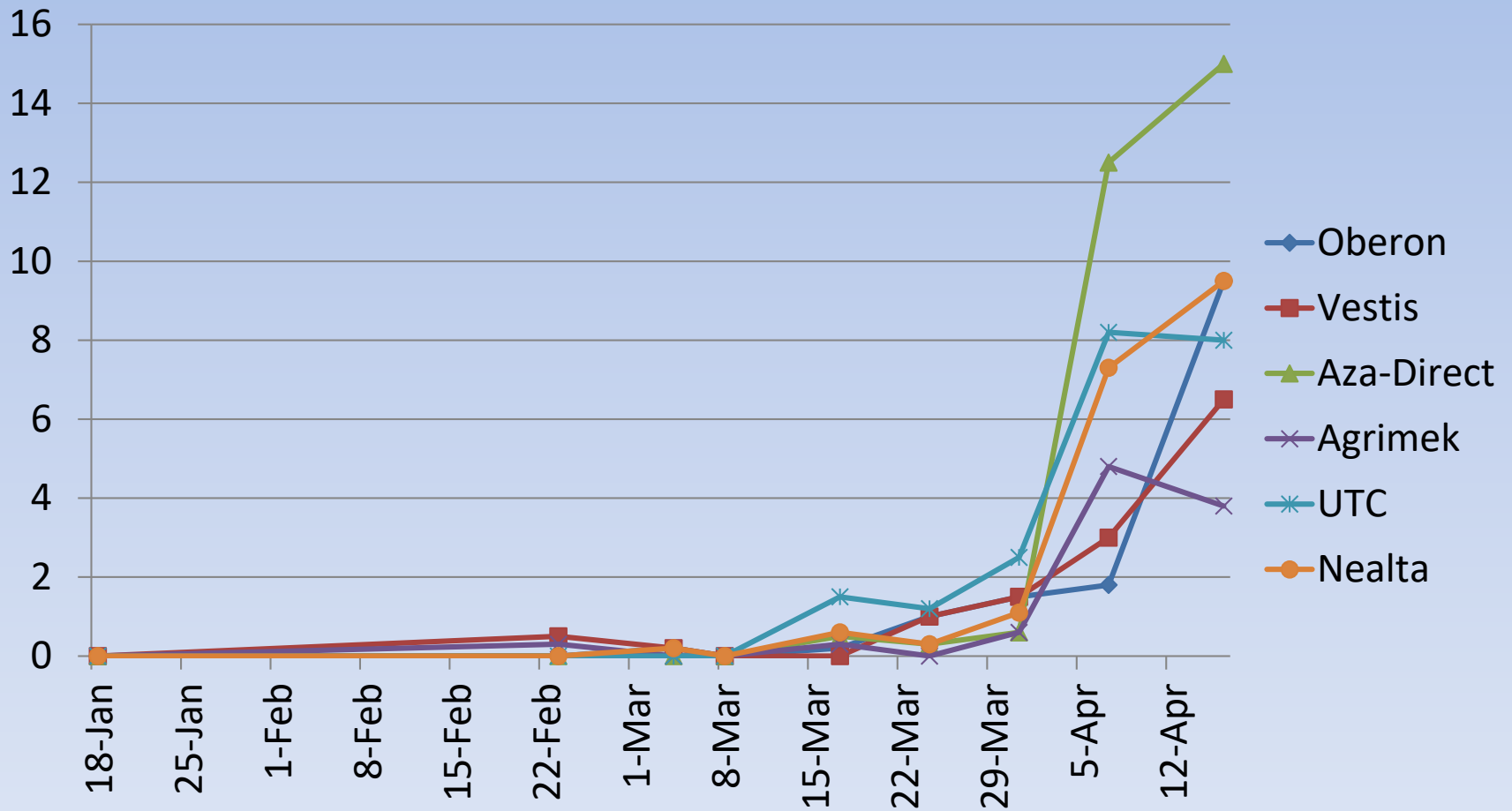
Numbers of twospotted spider mites counted per plot



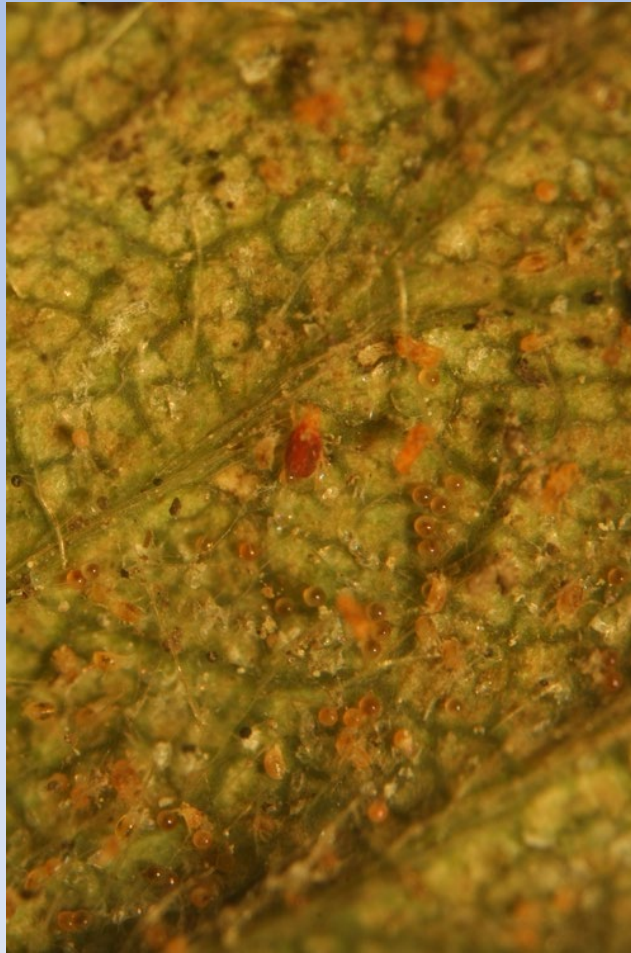
Numbers of Lewis mites counted per plot



Numbers of *P. persimilis* counted per plot



The question of carmine mite,
Tetranychus cinnabarinus



Is it actually different from *T. urticae*?

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Evidence for synonymy between *Tetranychus urticae* and *Tetranychus cinnabarinus* (Acari, Prostigmata, Tetranychidae): Review and new data
Philippe Auger, Alain Migeon, Edward A. Ueckermann, Louwrens Tiedt, Maria Navajas Navarro

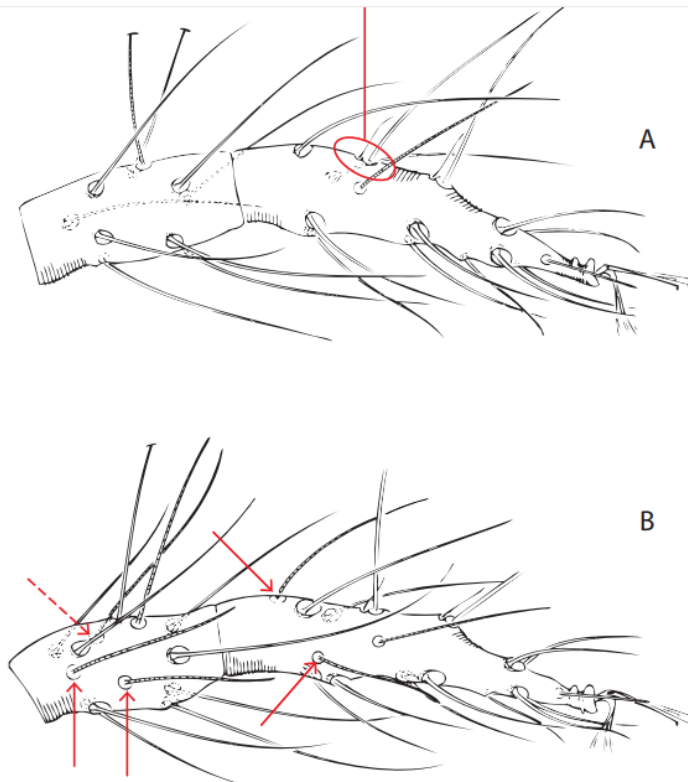
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Acarologia 53(4): 383-415 (2013)



FIGURE 4: A - Typical red hybrid F1 females of Tetranychus urticae obtained when crossing GF and RF ; B - rare red with pinkish glow F1 females.

influence of two pairs of non-allelic genes, which was however regarded as an oversimplification of the situation (Monroe, 1963).

In addition to the whole body colour of the mite, the number of dark food spots and the colour of eggs can also be a mark of hybridization. F1 females might lack dark spots and a pair of atypical supplementary caudal dark spot is often present in F2 and F3 green females (Keh, 1952; Taylor and Smith, 1956) (Figure 5).

linked to the body colour of the female (Monroe, 1963).

Mite colour for species diagnostics

A few years after the publication of Boisdual (1867) proposing the body colour to distinguish the GF (T. cinnabarinus) from other tetranychid species, Murray (1877) and Harvey (1892) considered that colour was not a reliable criterion to separate mites of the T. urticae species-group. Several authors report that the colouration of individuals may vary with the age of mites (Ewing, 1914; Monroe, 1963), with the feeding activity (Ewing, 1914; Pritchard and P... 1952) and with host-plant (C... 1951).

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Extra set of spots on the abdomen!

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Apps PR Prep Guide 2019 | Reading list

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rounded (Boudreaux, 1956), generally more separated at their base, narrow and relatively pointed (Boudreaux and Dosse, 1963b; Monroe, 1963; Carbonnelle and Hance, 2004) (Figure 11 A, B and C).

Acarologia 53(4): 383-415 (2013)

A

B C

FIGURE 11: Cuticular lobes on the dorsal striation of RF females of *Tetranychus urticae*. A - original drawing by H. Bruce Boudreaux — 1956 — *Ann. Entomol. Soc. Am.* 1956, 49: 43-48; B - cuticular lobes aspect using phase-contrast microscope; C - aspect of lobes using SEM.

FIGURE 9: GF females of *Tetranychus urticae* with an additional pair of spots in the caudal area.

A B

D

Using SEM, Hance *et al.* (1998) have measured different parameters to characterize the shape of lobes (Figure 12), and only one allowed them to distinguish between the two forms: the ratio between the base of the lobe (B) and its height (H) which was greater in the GF than in the RF (2.75 vs. 2.11).

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Both forms are *Tetranychus urticae*



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Effective management measures are the same

Conclusions

- There are good chemical options for control of Lewis mite, with apparent compatibility to Persimilis.
- Carmine mite is the same mite as twospotted spider mite.