

Two-Spotted Spidermite Management Using Predaceous Mites

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Two-Spotted Spidermite & Natural Enemies

- *Tetranychus urticae* **Broad Pest**
 - Arachnida, Acarina, Tetranychidae
- *Phytoseiulus persimilis* **Specialist Predator**
 - Arachnida, Acarina, Phytoseiidae
 - Prefers *Tetranychus Spp.*
- *Neoseiulus californicus* **Generalist Predator**
 - Arachnida, Acarina, Phytoseiidae
 - Most mite species, Thrips, Cyclamen



Mite Pests



Two-Spot vs Persimilis Biology

Population Growth Parameters

T. urticae

- **Temp**, humidity, variety, age, quality of crop
- *No development <53.6 F or >104 F*
- Micro-habitat leaf surface
- Mating of Females
 - Unfertilized=Male
 - Fertilized 3 to 1 female
 - Ave 100 eggs
- Dispersal

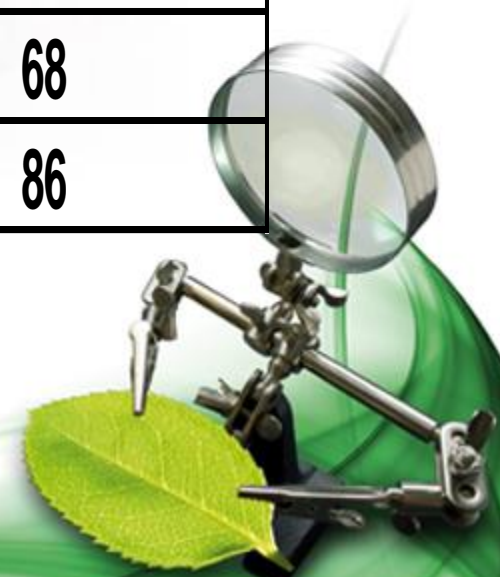
P. persimilis

- **Temperature, humidity, food source, crop,**
- Increased humidity higher hatching rate for eggs
- Mating of Mites
 - Unmated no eggs laid
 - Mated 4 F to 1 M
 - Needs to be mature
- Searching Behavior



Development time (days) of *P. persimilis* at 3 constant temperatures

egg-adult	Nymph 2	Nymph 1	Larva	Egg	Temperature 0F
19.6	4.1	3.9	3	8.6	59
7.2	1.6	1.4	1.1	3.1	68
3.9	0.8	0.8	0.6	1.7	86



Days to Develop

Species	Temperature	Egg	Egg to Adult
<i>P. persimilis</i>	59	8.6	19.6
<i>T. urticae</i>	59	14.3	32.9
<i>N. californicus</i>	55	8	22.4
<i>P. persimilis</i>	86	1.7	3.9
<i>T. urticae</i>	95	2.4	5.7
<i>N. californicus</i>	91	1.6	3.7

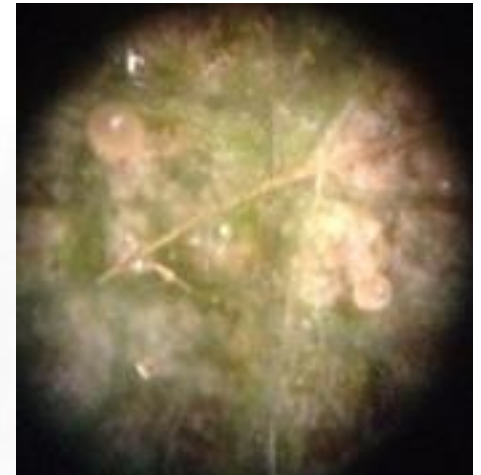
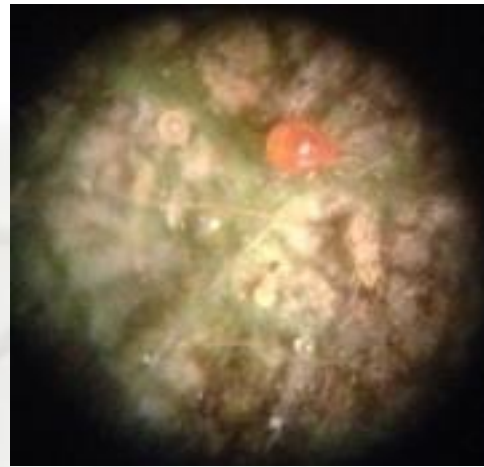
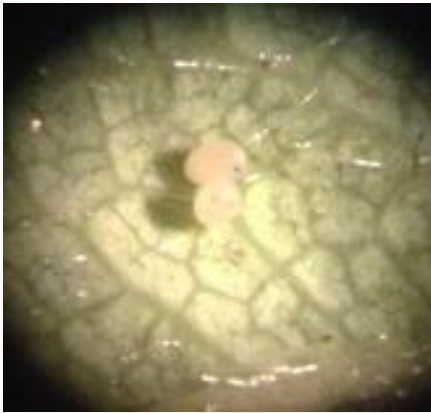


At 68 F, a single female predator will consume 5 adults or 20 nymphs/eggs of spidermite per day



Predator Pictures

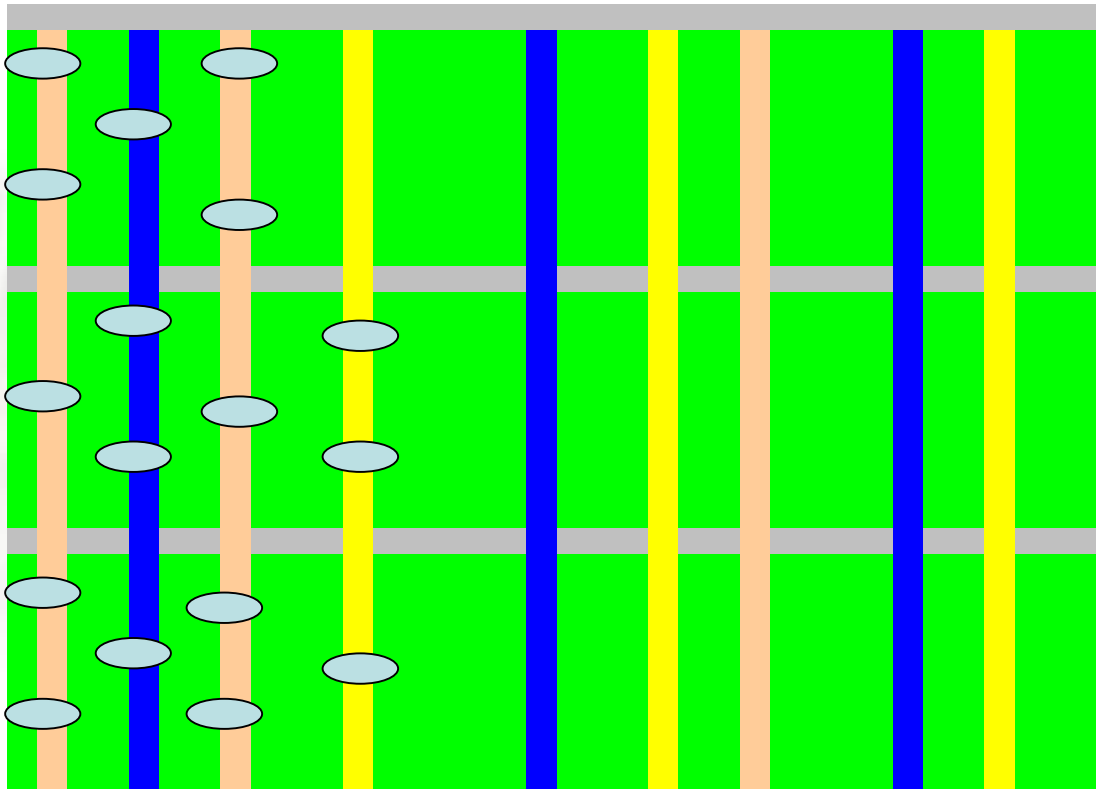
- Californicus eggs



- Persimilis adult and egg
- Persimilis and spidermite eggs



Spidermite Distribution



 week 1
 week 3
 week 5





Scouting Software

Click an observation rectangle to show details.

◀ wk 21 | wk 23 ▼ | none ▶

Spidermite
- (abs/pres) 55.12 %
Show Spidermite

Persimilis
- (abs/pres) 35.61 %
Show Persimilis

Neoseiulus

Whitefly
+ (abs/pres) 8.78 %
Show Whitefly

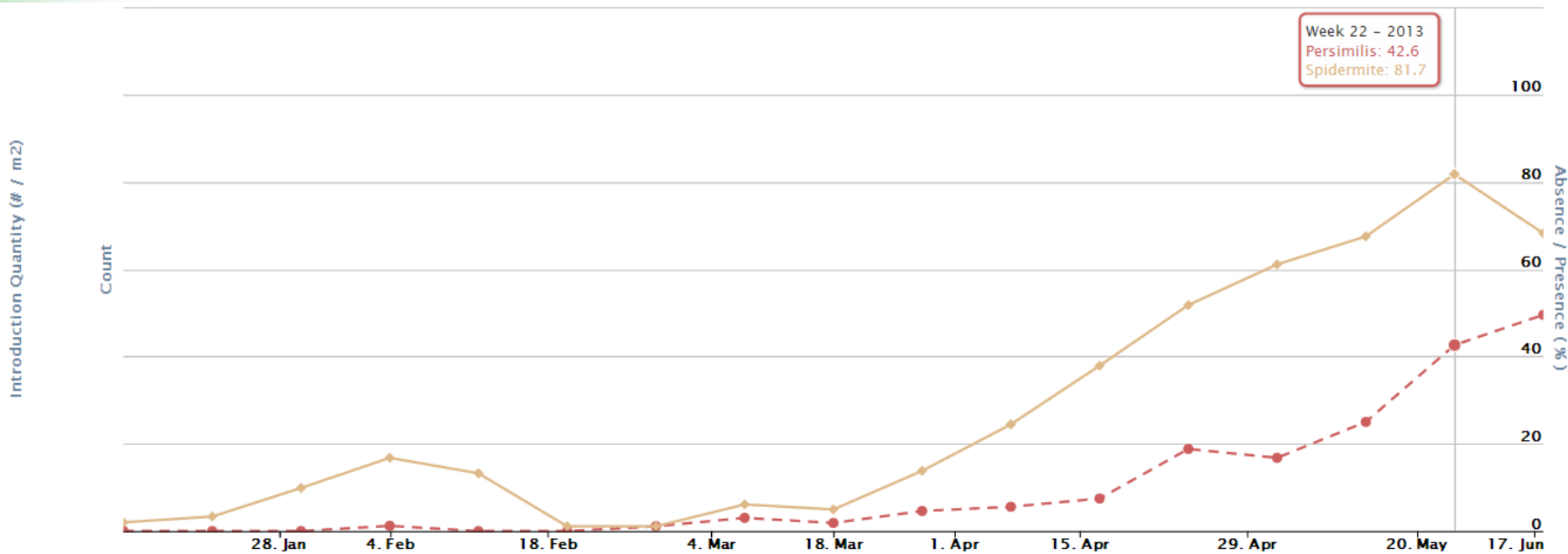
Aphid
+ (abs/pres) 3.9 %
Show Aphid

Powdery Mildew

Aphidius
+ (abs/pres) 2.93 %
Show Aphidius



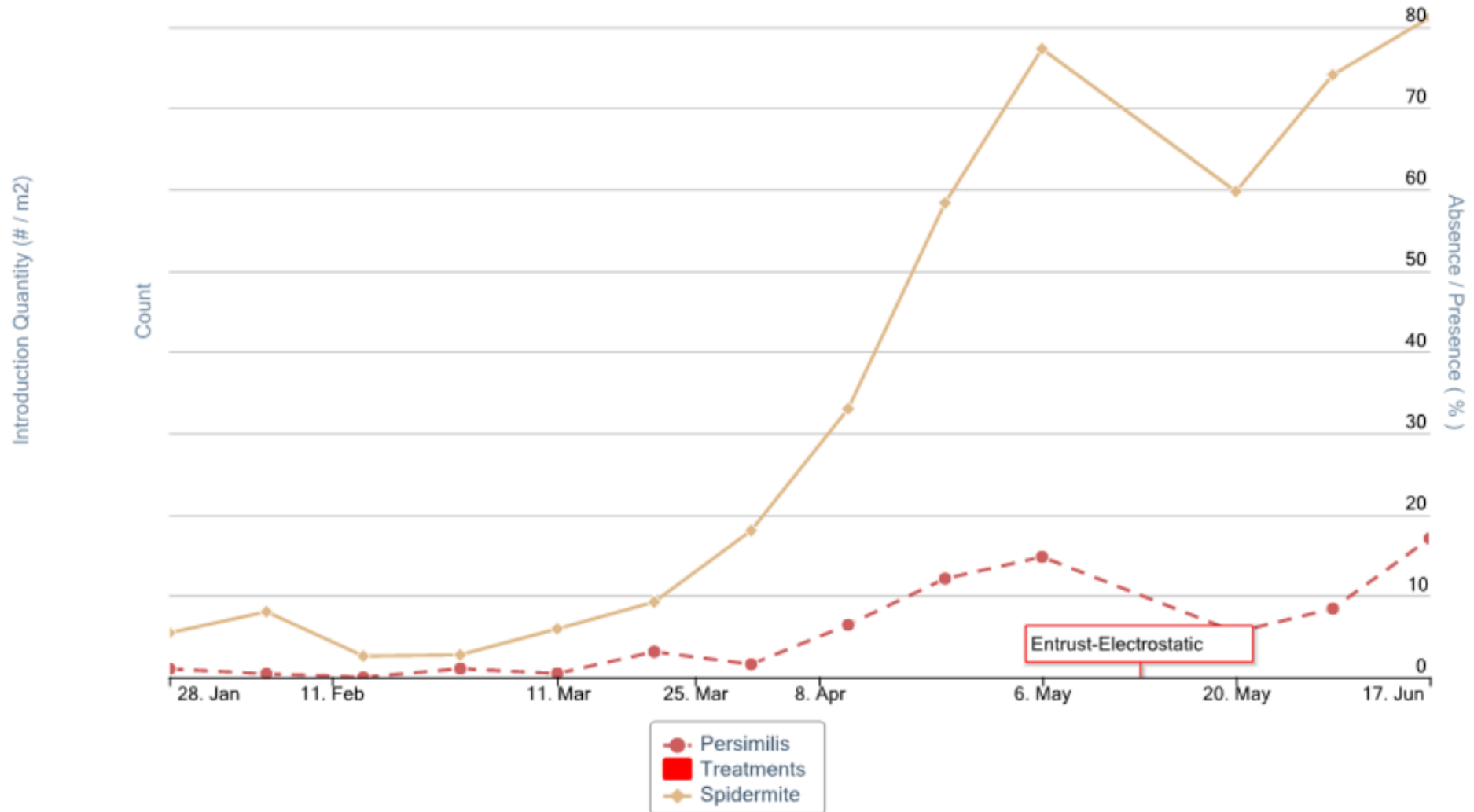
Spidermite/Persimilis



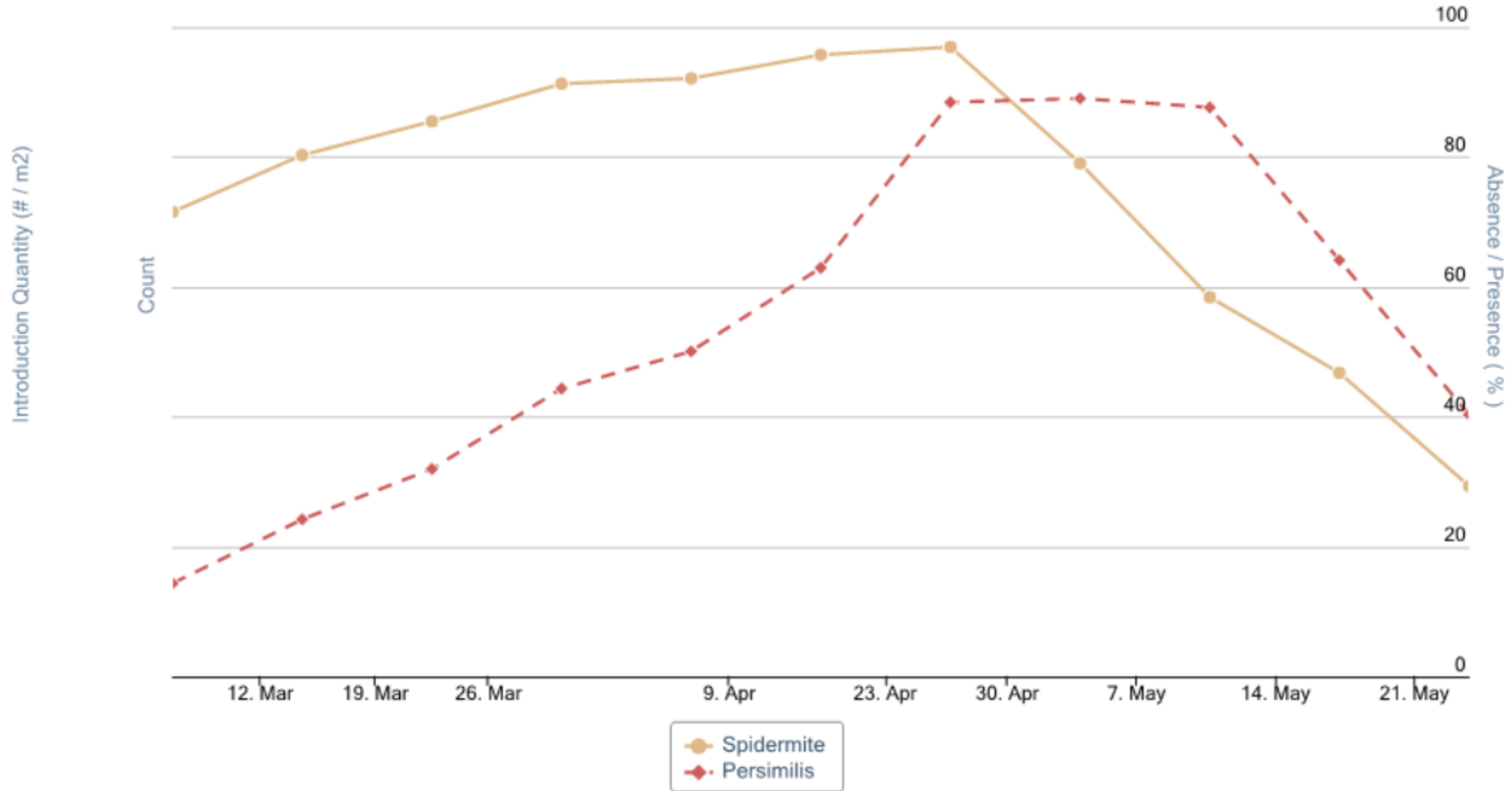
Organic 3-5%
Conventional 10%



Chemical Effects



Predator Balance



Side Effects Guide

- www.koppert.com
 - Side effects
- www.koppert.mobi
 - From your mobile phone

