

# Working to improve spider mite management in high tunnel cucumbers (*Cucumis sativa* L.)

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## Diversify and optimize production

Cucumber crops are well suited for HT production because of their vertical growth habit, wide selection of cultivars bred for protected cultivation, and repeated flowering providing multiple harvests. They can increase crop diversity in HT systems, in rotation with tomatoes, leafy greens and other valuable crops.

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## Two-spotted spider mite (*Tetranychus urticae*; TSSM)

TSSM is an important pest impacting cucumber production, particularly in protected cultivation. They are difficult to detect at low densities and reduce yield by causing yellowed stippling symptoms and eventual leaf death.

## Management strategies

Variation in the susceptibility among cucumber cultivars has been documented in previous variety trials. We will elaborate on this screening to identify additional tolerant varieties (Table 1). We will evaluate the efficacy of a variety of commercially available natural enemies to guide recommendations for the most suitable species for high tunnel systems and environmental stressors.

## Incorporating Biopesticides

There are a variety of biopesticides registered for use in controlled environments, and some of which have OMRI approval. We aim to evaluate the efficacy of these products in high tunnel systems and their compatibility with natural enemies (Table 2).

Table 1. Cucumber variety trial evaluation in 2018

Cultivar	Rating*
Dutch greenhouse type	
Camaro	5.5 a <sup>7</sup>
Kalunga	6.0 a
Tyria	6.0 a
Beit alpha and mini type	
Katrina	7.0 a
Socrates	4.7 ab
Manny	6.2 a
Manar	4.7 ab
Jawell	7.0 a
Picolino	5.7 a
Japanese type	
Taurus	2.2 bc
Tasty Jade	1 c
Tasty Green	2.2 bc
American slicer type	
Corinto	4.2 ab
Lisboa	4.2 ab
Alcazar	5.7 a
Sweet Success	5.2 a
P	<0.0001

Rating: The severity of plant leaf damage caused by TSSM.  
Guan *et al.* 2019

Table 2. Biopesticide list of potential product to control mites in high tunnel.

Agent Type	Trade Name
Paraffinic oil	JMS Stylet Oil
<i>Burkholderia</i> spp. A396	Venerate XC & CG
Rosemary, Thyme, Clove and Cinnamon oils	Insect Annihilator
Azadirachtin	AzaGuard®
Chromobacterium Subtsugae Strain PRAA4-1 T	Grandevo®

## Would you like to participate in this project?

Click on the link to fill out a form <https://tinyurl.com/TSSMinHT> or email [lingwell@purdue.edu](mailto:lingwell@purdue.edu) or [lavilesl@purdue.edu](mailto:lavilesl@purdue.edu)

In the meantime, check out this new guide: <https://extension.entm.purdue.edu/publications/ID-521/ID-521-W.pdf>

