

## BACKGROUND

High tunnels (HTs) are a protected culture tool for specialty crop farmers. Cucumbers (*Cucumis sativa* L.) are well suited for HT production because their vertical growth pattern allows for space optimization and repeated flowering offers multiple harvest opportunities. However, twospotted spider mite (*Tetranychus urticae* Koch; TSSM; **Fig. 1A**) limit production in HT systems; they often go unnoticed by farmers until the damage is irreversible and difficult to control. Management recommendations are based on field or greenhouse systems and rely on conventional miticides. Alternative management options are limited. Recommendations for HTs are needed.



Figure 1. TSSM adults, photo by John Obermeyer (A); Cucumber cultivar evaluations (B); Biorational insecticide (Insecticidal soap, C); Predatory mite consuming TSSM eggs (D).

## BIOLOGICAL CONTROL: BIOPESTICIDES

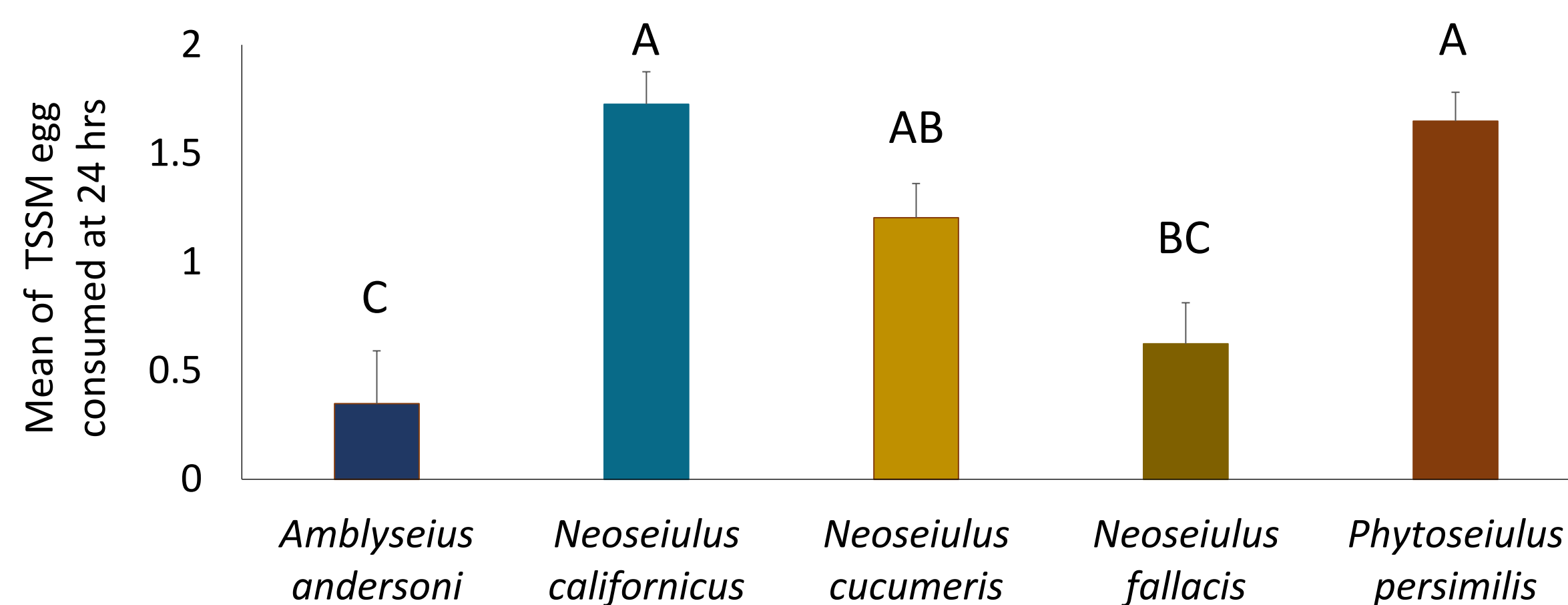
Neem Oil®, Grandevo®, and Bioceres® are the most efficacious products evaluated in this study against TSSM adults. AzaGuard® and Pyganic® increased the mortality of predatory mites and are not recommended in conjunction with biological control.

Products	Percentage of mortality		
	Adult TSSM	<i>A. andersoni</i>	<i>N. fallacis</i>
Neem Oil®	50	15	20
Grandevo®	80	10	20
Bioceres®	75	20	10
AzaGuard®	50	50	50
Pyganic®	15	50	15
Insecticidal soap®	15	15	10
Water	0	0	0
Venerate®	15	15	35

## BIOLOGICAL CONTROL: PREDATORY MITES

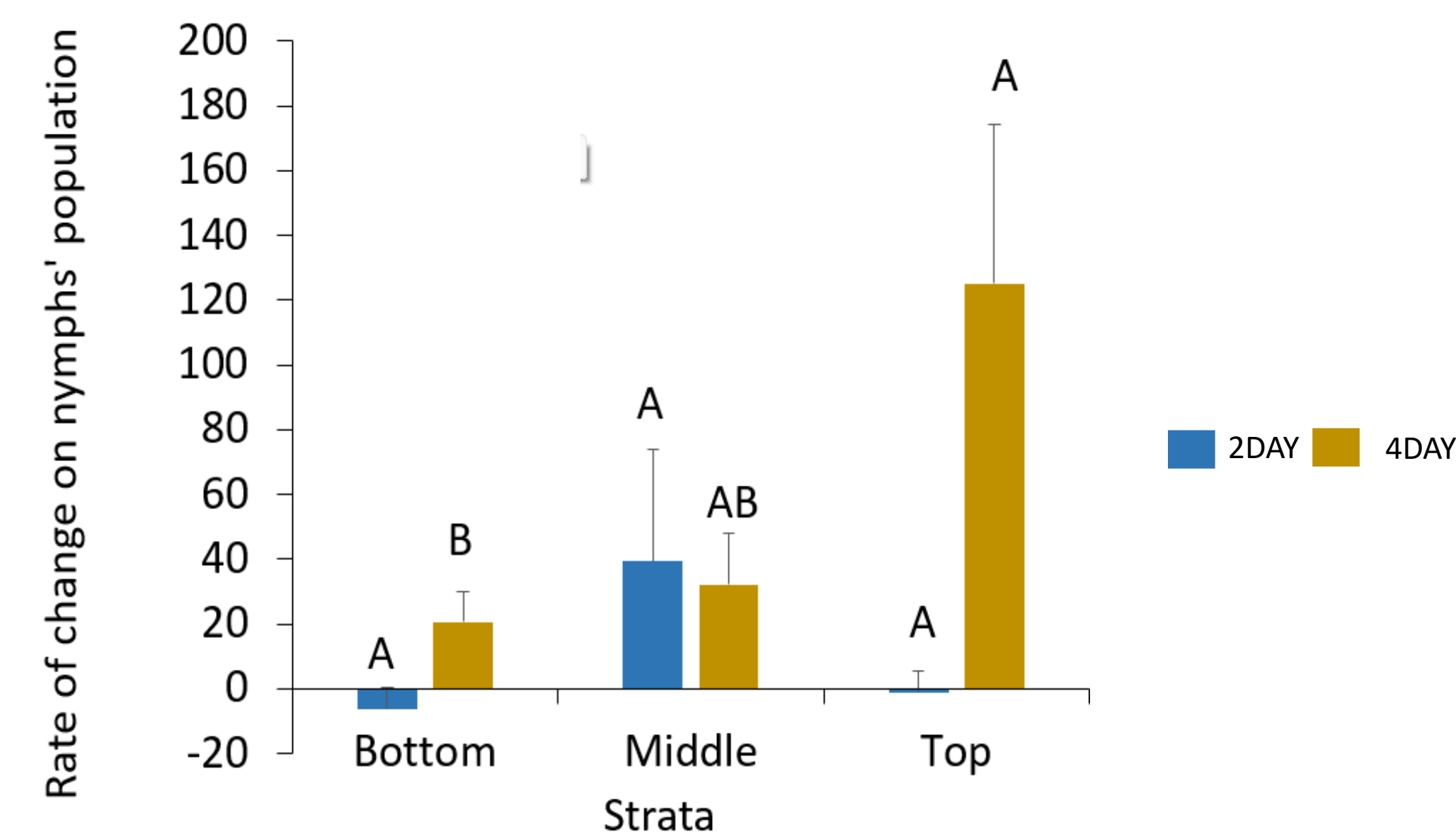
### TSSM egg consumption by predators

*Neoseiulus californicus* and *N. cucumeris* are the best generalist predator to control TSSM in high tunnels.

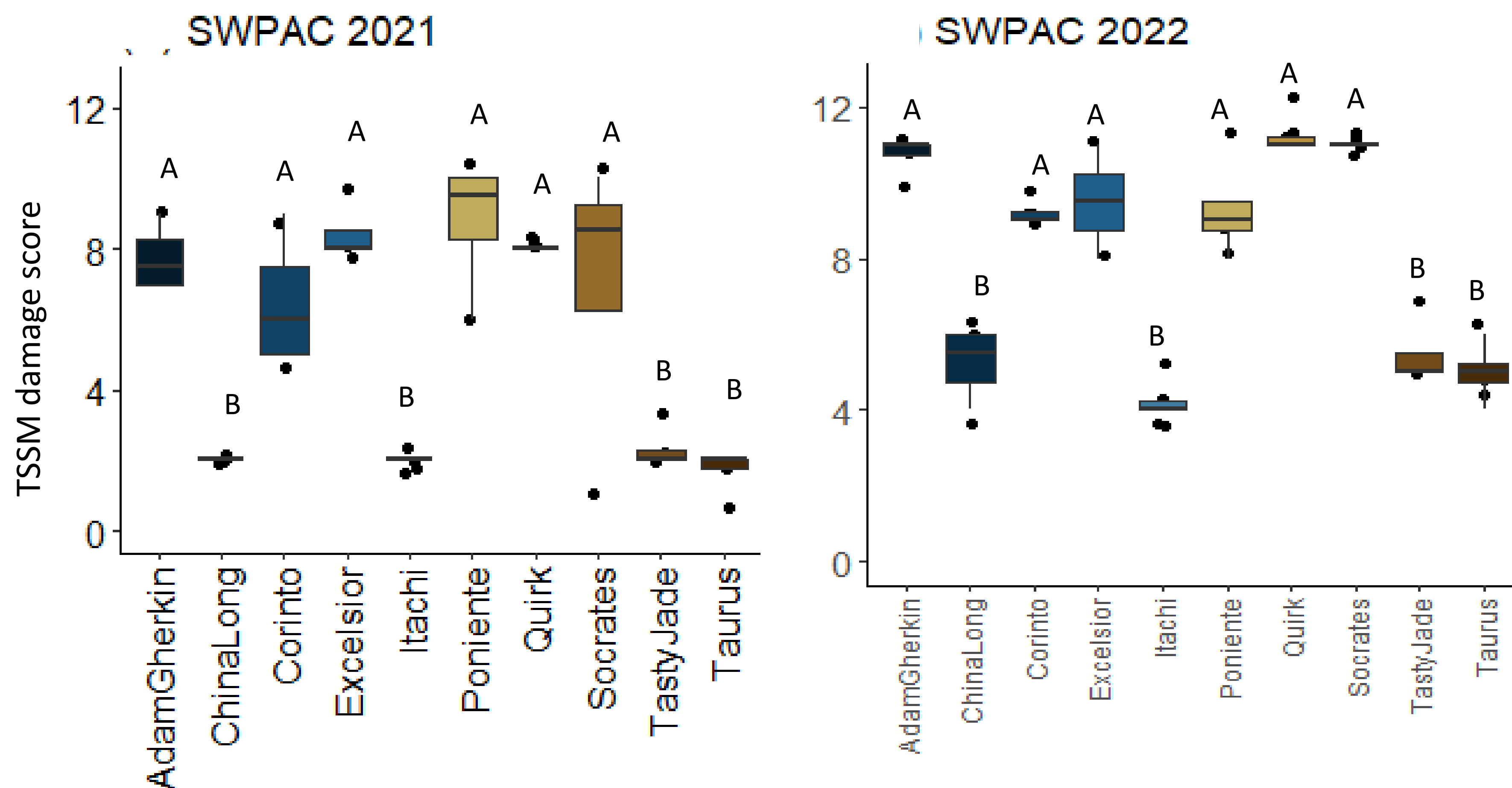


### Spatial distribution of predators

Predatory mites preferentially forage at the base of the crop, with no difference between species.



## CULTIVAR SELECTION



The slicing cultivars Itachi, China Long, Tasty Jade and Taurus experience less TSSM damage and are therefore recommended for HT production. We didn't detect any differences in susceptibility among the pickling varieties (Adam Gherkin, Quirk, Excelsior).

How good are you at detecting spider mite damage? Please scan this code to help us determine the limit of detection.