

# A Midwestern Perspective on a New Strawberry Disease Caused by *Neopestalotiopsis* spp.

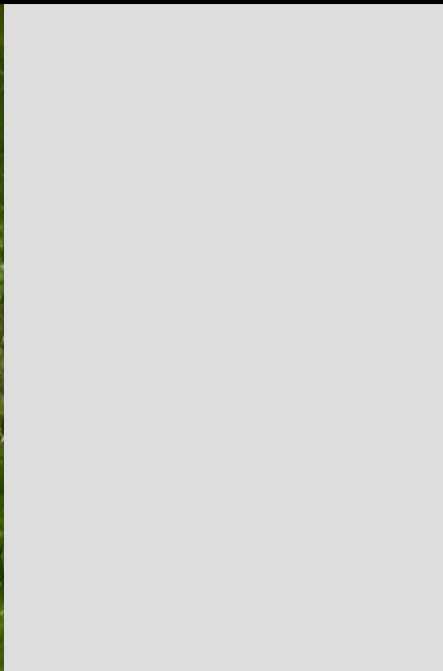
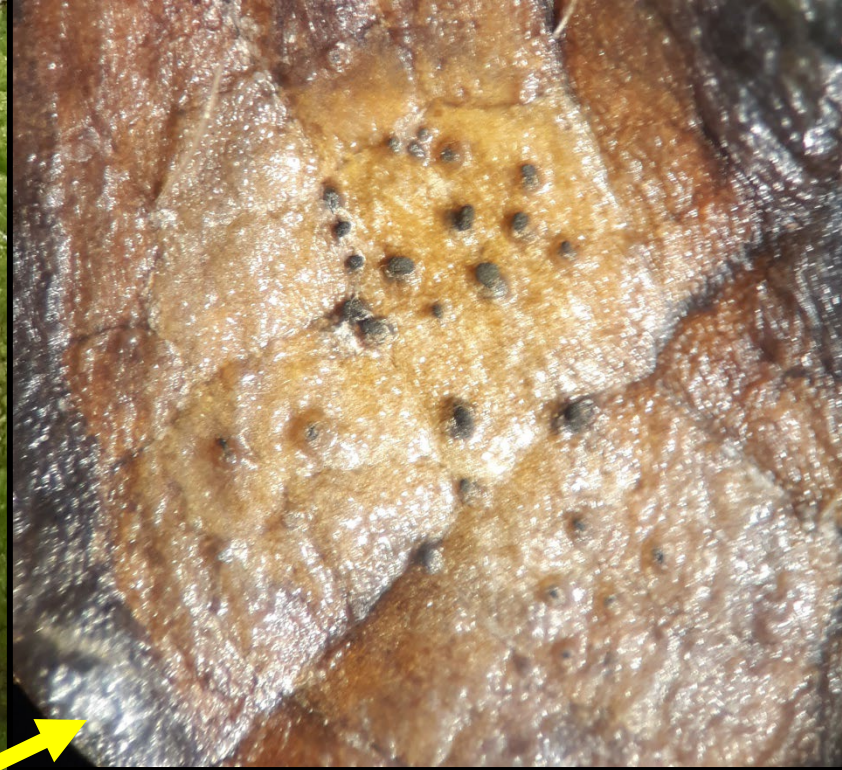
Dan Egel, Wenjing Guan, John Bonkowski, Tom Creswell





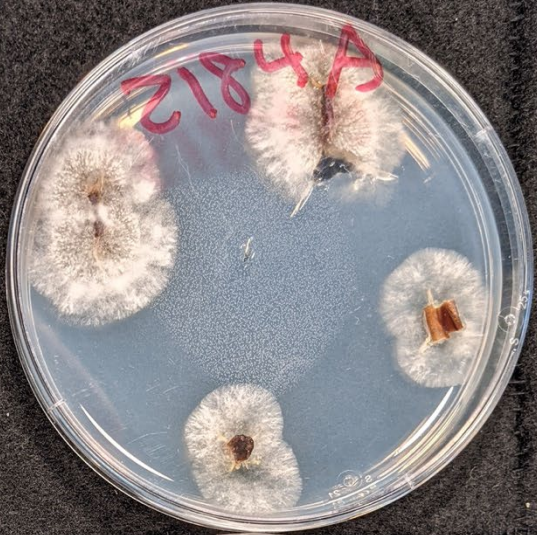
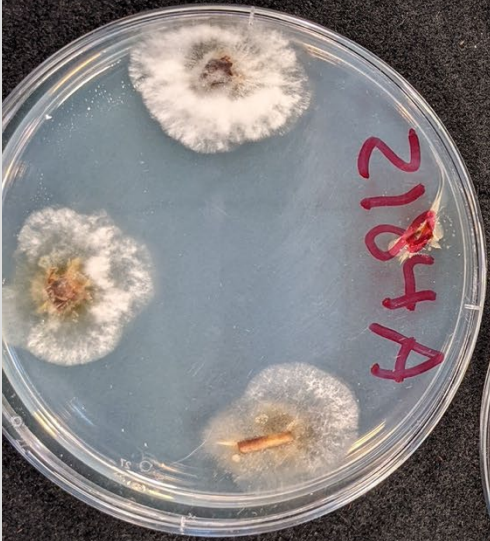








John Bonkowski, Purdue University



# Neopestalotiopsis leaf spot and plant decline

- June 2020—Wenjing Guan strawberry variety trial
- New fungus isolated
- Neopestalotiopsis in the SE US for several years





# Today's presentation

- Neopest finds across Indiana
- Variety trials in greenhouse
- Fungicide trials
- Decline symptoms
- Management



# SURVEY



## Partial List of Neopest finds in Indiana

Date	County	Disease	Culture	Comment
Jun 2020	Knox	Foliar	Plasticulture	Variety trial
Jun 2020	Parke	Decline	Matted Row	Not found in 2021
Aug 2020	Knox	Foliar	Plug trays	Taxonomy uncertain
Apr 2021	Hendricks	Decline	Plasticulture	Mixed varieties
Jun 2021	Knox	Foliar	Plasticulture	Mixed varieties
Sept 2021	Knox	Decline	Plug trays	
Oct 2021	Knox	Decline	Bench top pots	From plugs
Nov 2021	Tippecanoe	Decline	Plasticulture	High tunnel

# GREENHOUSE VARIETY TRIALS

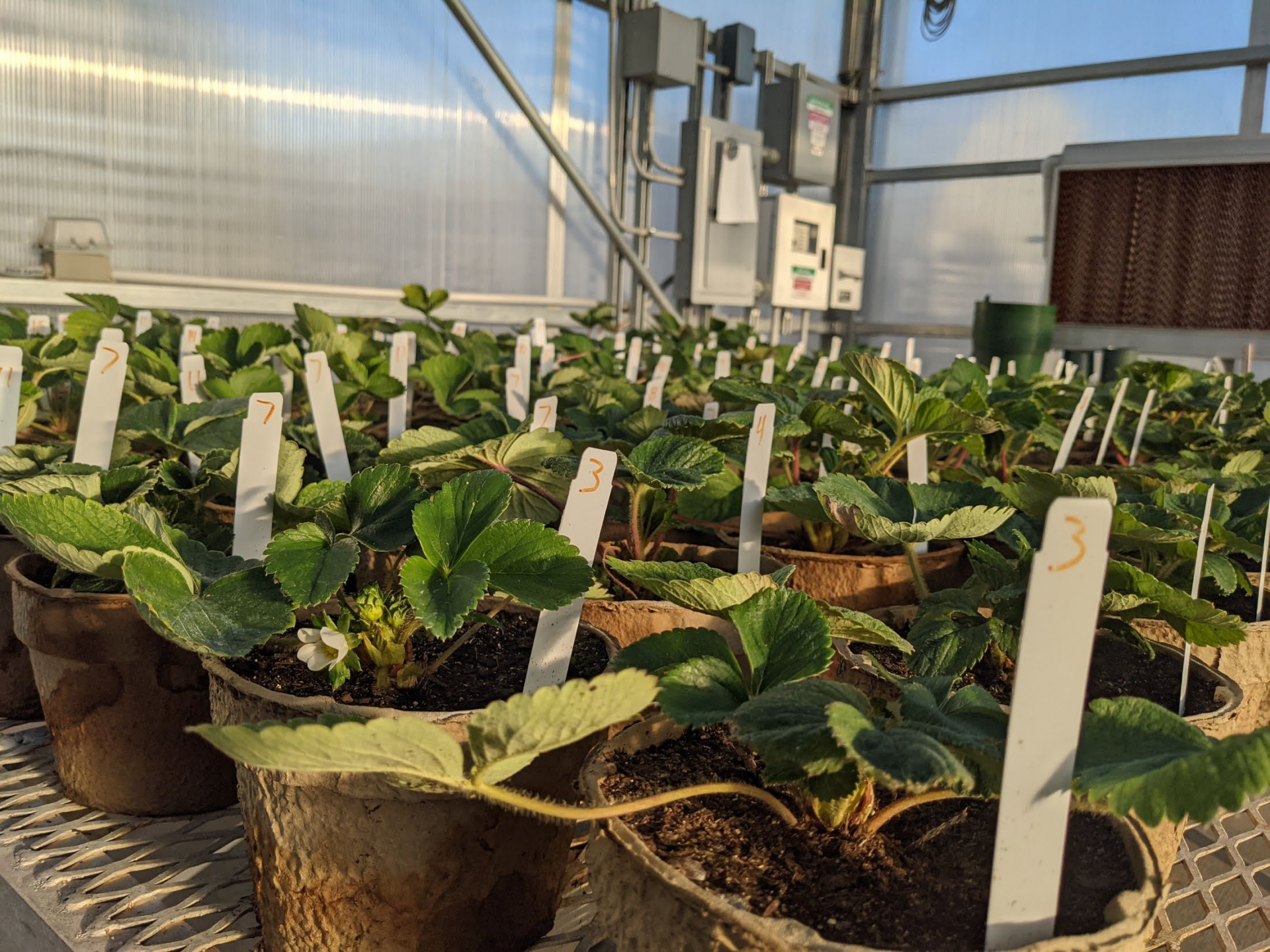


# Greenhouse Variety Trials

- 22 varieties trialed
  - Bare-root plants or plug plants
  - Day-neutral vs short day plants (June bearing)
- 15 cubic inch pots with peat-based media, replicated 4 times
- Inoculated with  $1 \times 10^5$  spores/ml *Neopestalotiopsis*
- Plants kept in humid chamber 48 hours

# Strawberry varieties in greenhouse trials

Variety	Day neutrality	Variety	Day neutrality
AC Valley Sunset	Short day	Florida Sensation	Short day
Albion	Day-Neutral	Fronteras	Short day
Camarosa	Short day	Galleta	Short day
Camino Real	Short day	Honeoeye	Short day
Chandler	Short day	Jewel	Short day
Darselect	Short day	Malwina	Short day
Earliglow	Short day	Monterey	Day-neutral
Evie II	Day-neutral	Ruby June	Short day
Flavorfest	Short day	San Andreas	Day-neutral
Florida Brilliance	Short day	Sonata	Short day
Florida Radiance	Short day	Sweet Charlie	Short day



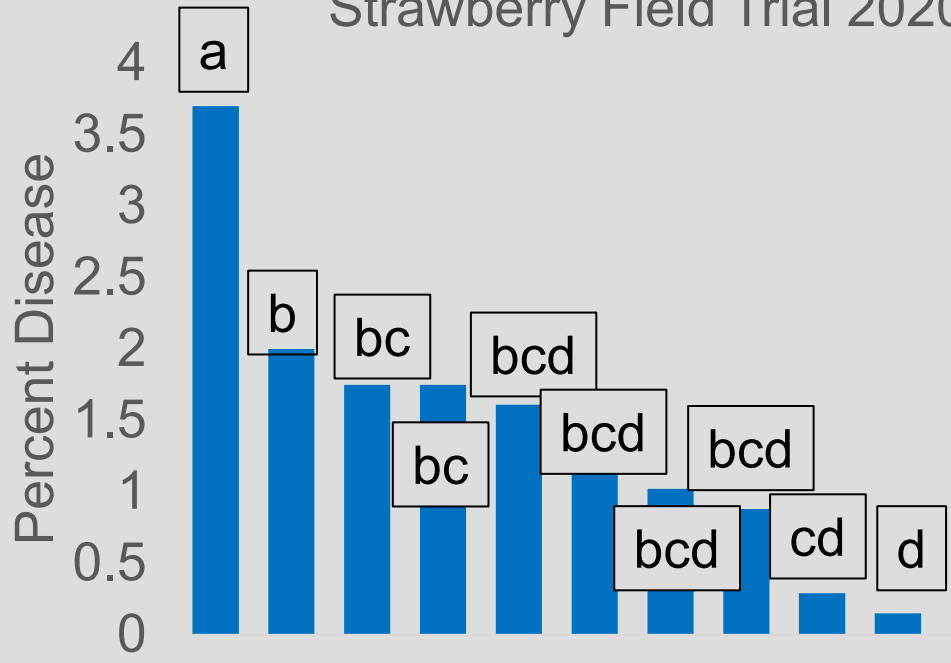


Plants kept in 100% relative humidity 48 hours





# Strawberry Field Trial 2020

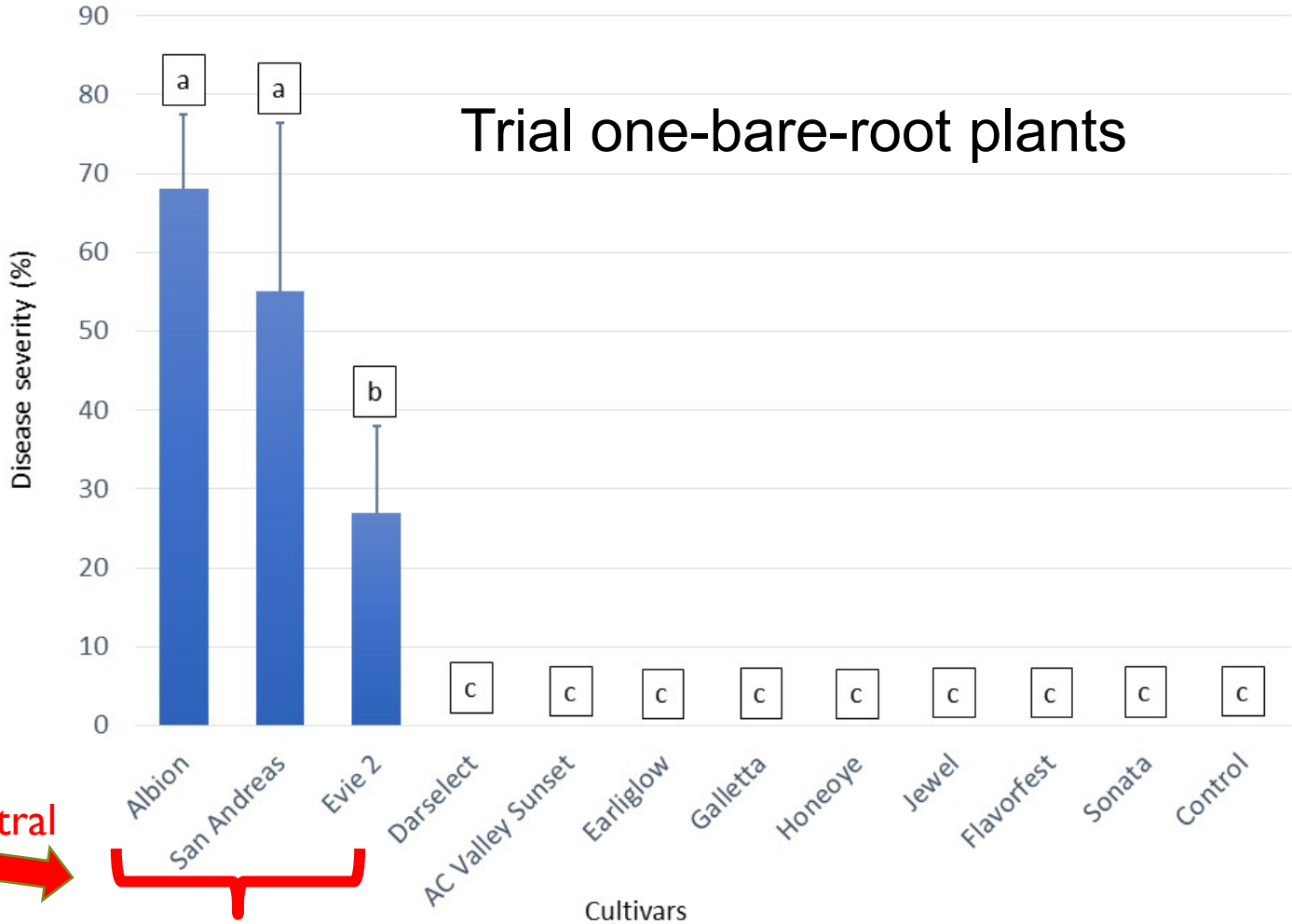


Day neutral



Varieties

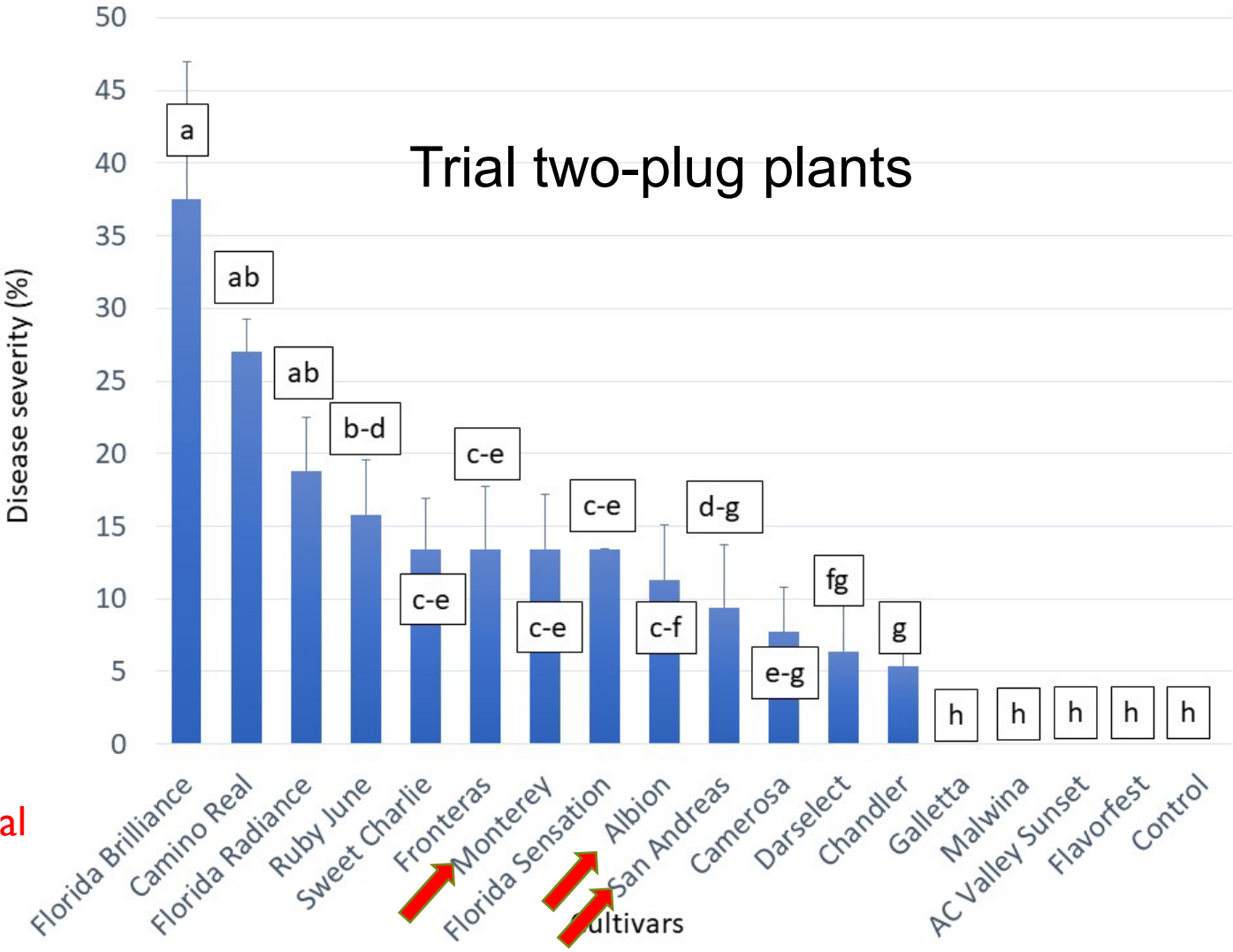
# Trial one-bare-root plants



Day neutral

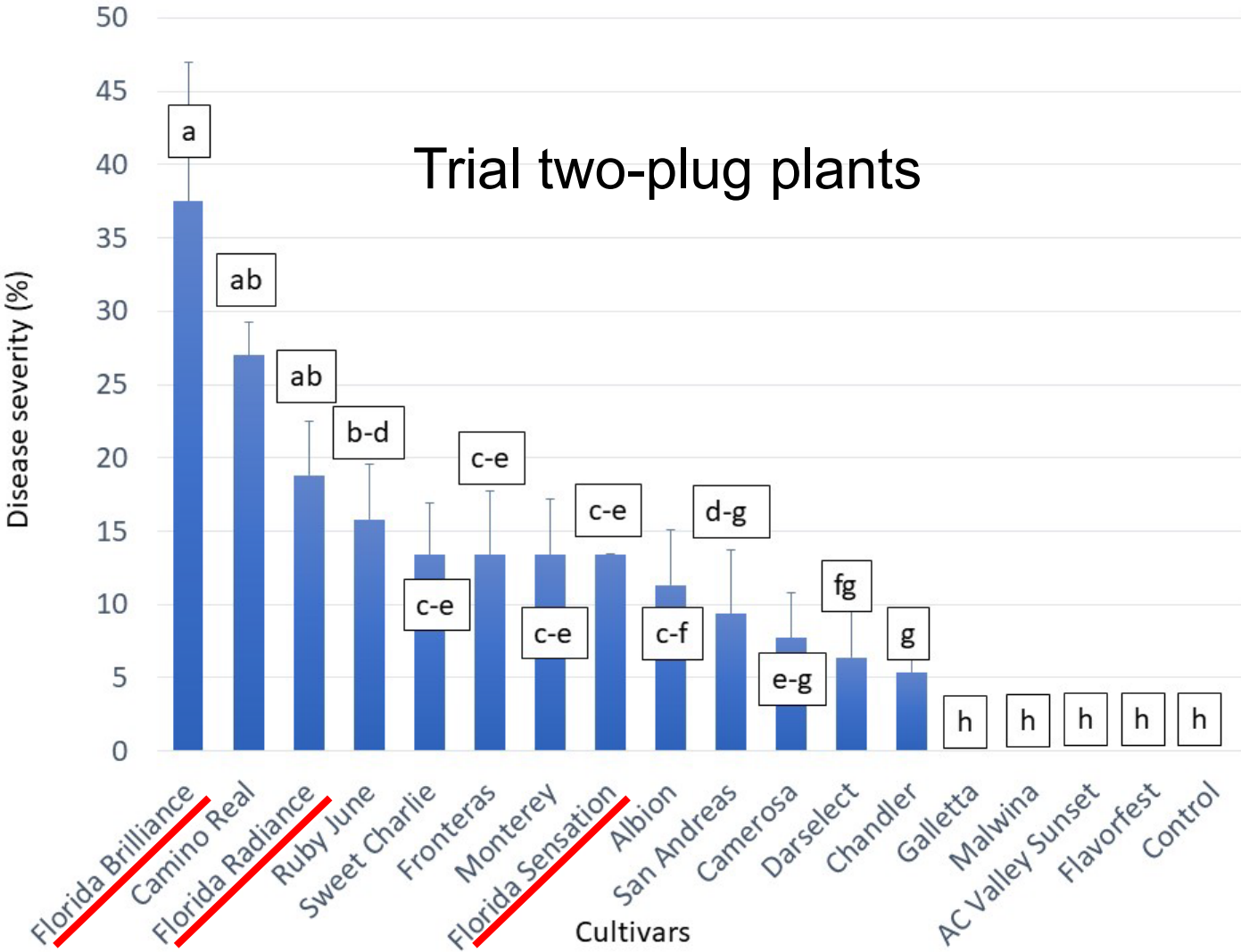


# Trial two-plug plants



Day neutral

# Trial two-plug plants



## Short day strawberry varieties that were not symptomatic in greenhouse trials

Asymptomatic varieties	Number of trials
AC Valley Sunset	4
Darselect	2/4
Earliglow	2
Flavorfest	4
Galletta	4
Honeoye	2
Jewel	2
Malwina	2
Sonata	2

## Florida vs Midwest Strawberry Production

- Florida varieties are among most susceptible
- Common Midwest varieties minimal or no symptoms
- Likely fewer foliar symptoms of Neopest in Midwest than in Florida.

# GREENHOUSE FUNGICIDE TRIALS





# Greenhouse Fungicide Trials

- Fungicides applied with CO<sub>2</sub> pressurized backpack sprayer
- 60 PSI, 40 GPA
- Two Teejet 8002VS nozzles 19 inches apart
- Fungicides applied 3 hours before inoculation

## Fungicides used in greenhouse trials (FRAC codes)\*

Contact	Systemic	OMRI**
Captan 80 WDG (M)	Tilt (3)	Badge X2
Thiram SC (M)	Switch 62.5 WG (9, 12)	Serenade Opti
	Quadris Top (11, 3)	Sil-Matrix
	Pristine (7, 11)	
	Abound (11)	

- FRAC= modes of action
- OMRI=Organic Material Research Institute

## Fungicide control of Neopest leaf spot

Treatment & rate/A	Disease severity
Non-treated/non-inoculated	0.0 f
Captan 80 WDG 3.75 lb	5.4 e
Tilt 4 fl oz	6.4 e
Thiram SC 2.5 qt	7.7 e
Switch 62.5 WG 14 oz	7.7 e
Badge X2 2.5 lb	15.8 d
Serenade Opti 20 oz	18.8 cd
Sil-Matrix 1% v/v	22.5 bcd
Quadris Top 14 fl oz	22.5 bcd
Pristine 23 oz	27.0 abc
Abound SC 15.5 fl oz	32.0 ab
Non treated/inoculated	37.5 a

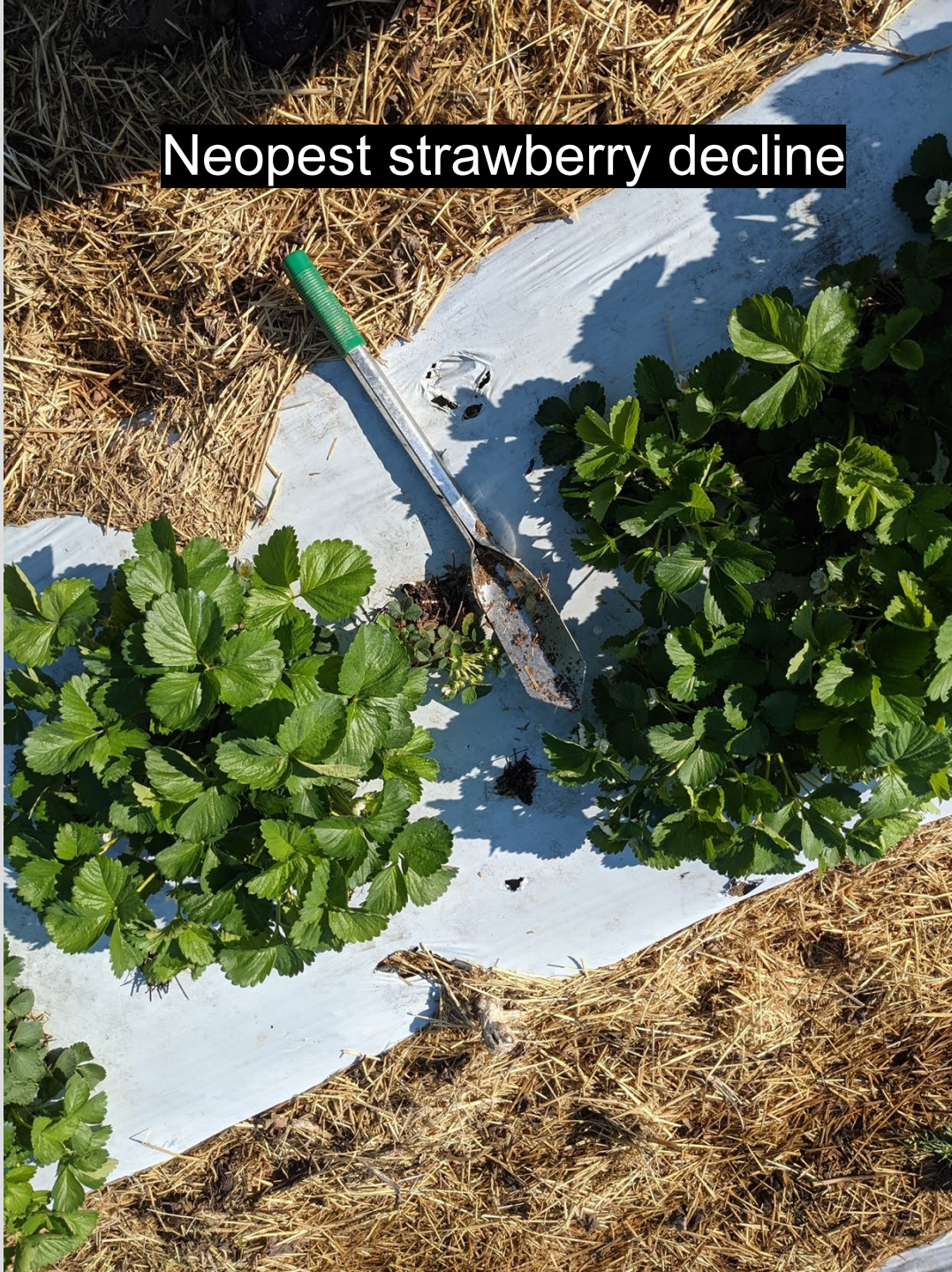
# SYMPTOMS OF NEOPEST PLANT DECLINE



# Neopest strawberry decline



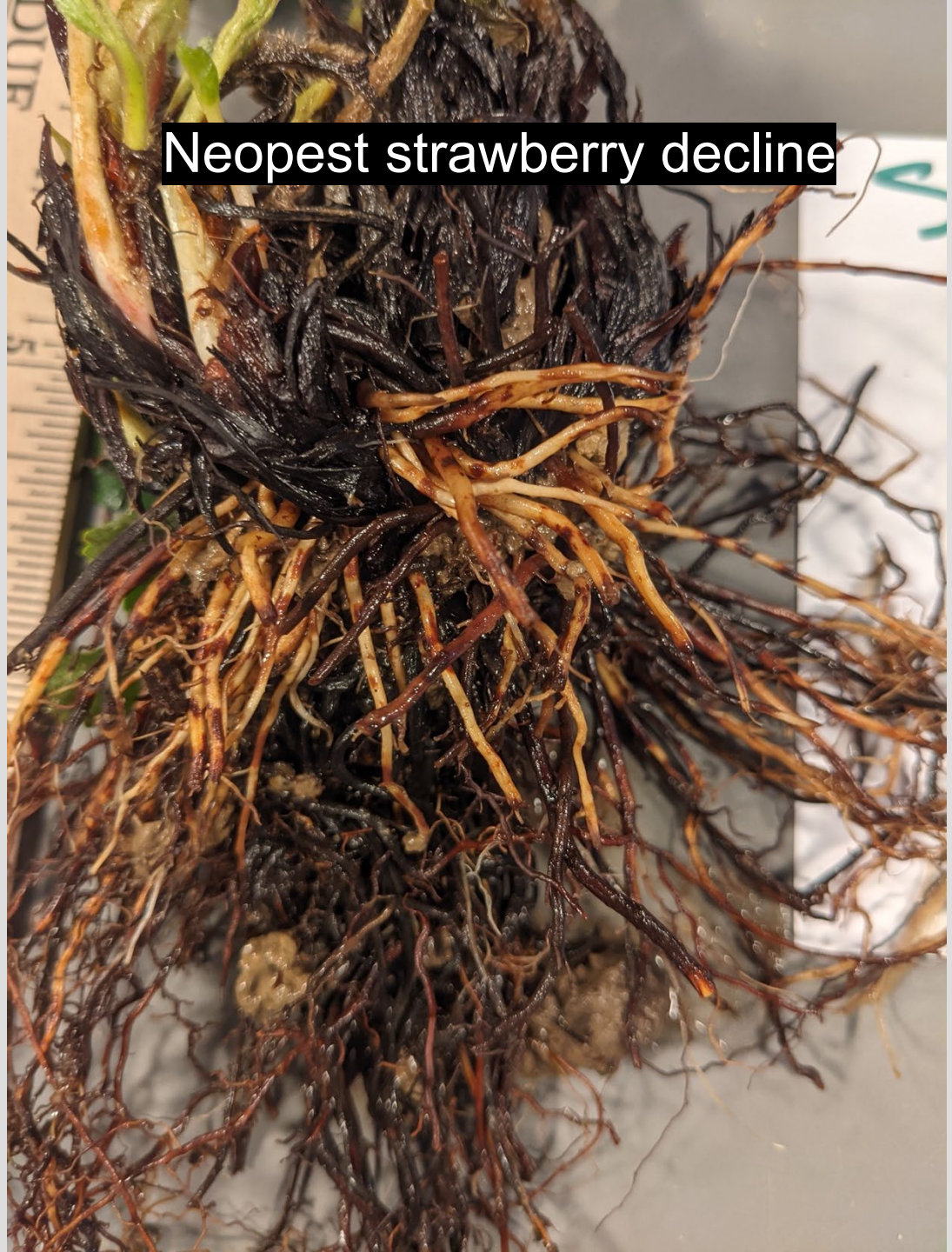
# Neopest strawberry decline



# Neopest strawberry decline



Neopest strawberry decline





# Neopest strawberry decline



# Neopest strawberry decline



**Rhizoctonia strawberry decline**

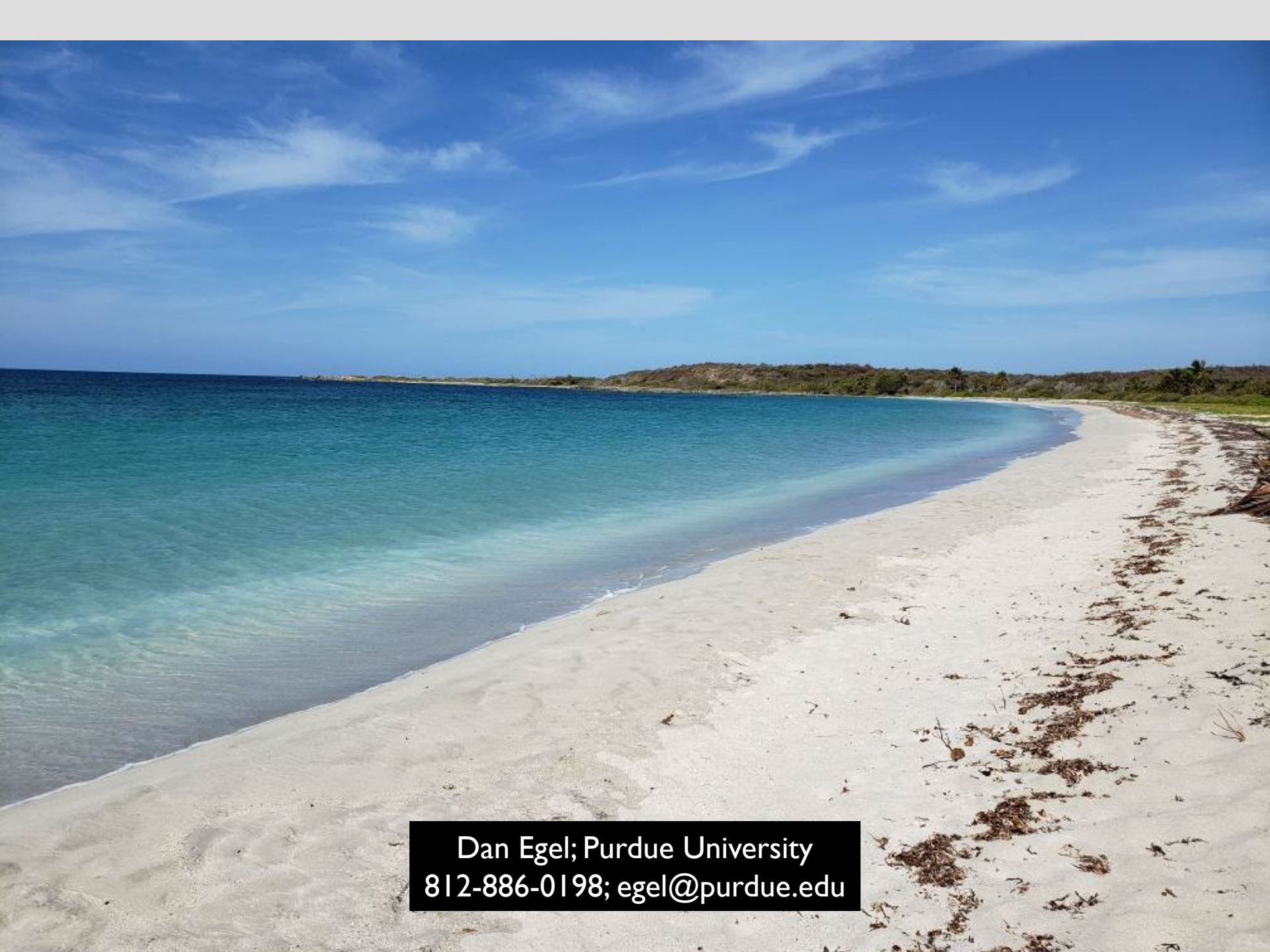


# Management of Neopest

- Inspect planting stock & in season
  - Send suspicious samples for diagnosis
- Choose varieties for partial resistance
  - Several short-day varieties have minimal symptoms
- Apply fungicides protectively
  - Captan, Thiram, Tilt, Switch

# Research Support

- North American Strawberry Growers Association
- SARE program LNC21-454
- Natalia Peres, University of Florida
- Dean Haseman, Purdue University
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- Many growers for allowing us to sample their operations
- Plant Dis. Manag. Rep. 16:PF045
- Plant Health Progress  
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