

# New Grapevine Cultivars

What it takes | What we have

Christopher Chen, Ph.D.



# Tolerant Cultivars

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Rootstocks have long been used as a method of tolerance to both biotic and abiotic stressors. <sup>(22)</sup>

- GRN rootstocks for nematode tolerance

Scions are also being developed to help impart tolerance to specific pests and/or diseases <sup>(23)</sup>

- Pierce's Disease resistant scions

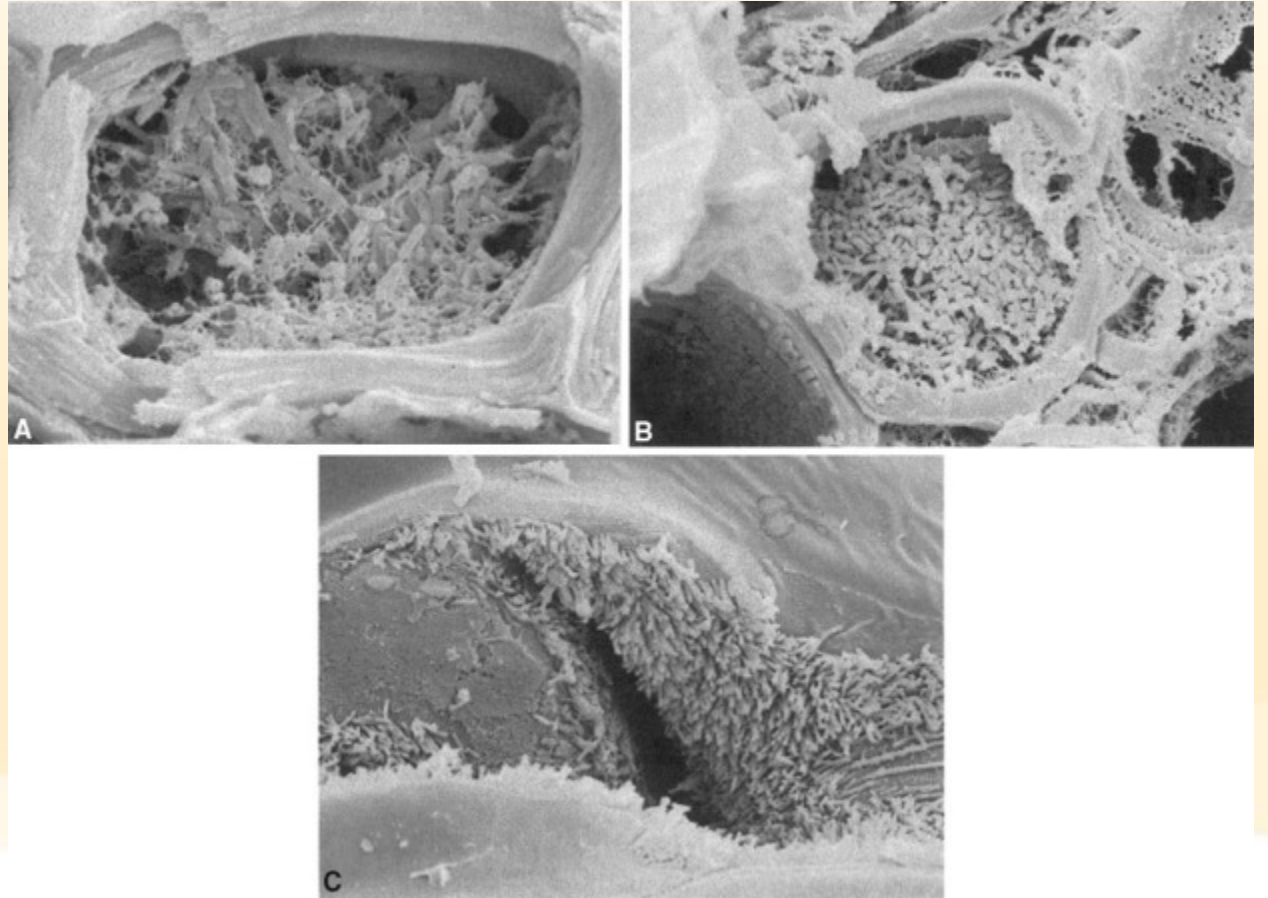
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23. A. F. Krivanek and M. A. Walker. *Vitis* resistance to pierce's disease is characterized by differential *Xylella fastidiosa* populations in stems and leaves. *Phytopathology*, 95:44–52, 1 2005. ISSN 0031-949X. doi: 10.1094/PHYTO-95-0044.

# Finding a PD-tolerant Scion

*Xylella fastidiosa* clogs the xylem vessels in grapevines by colonizing the vessels

To find a ‘tolerant cultivar’ would be to find one where vascular hydraulic conductivity does not fail under *X. fastidiosa* infections



# PD tolerant scions – the ‘Walkers’

Over 20 years of development led to the release of five grape scions with inherent resistant to *X. fastidiosa*

Developed by the Walker Lab at UC Davis

Meant to mimic the most popular cultivars in California



# PD tolerant scions - Red Grapes

## 1. Camminare noir

- 50% Petite Syrah; 25% Cab Sauv
- Characteristics of both parents
- Early budbreak and maturity
- 94% *Vitis vinifera*

## 2. Passeante noir

- 50% Zin; 25% Petite Syrah; 12.5% CS
- Characters of Zinfandel and Cab Sauv
- Late bloom and mid-season maturity
- 97% *Vitis vinifera*



# PD tolerant scions - Red Grapes

## 3. Errante noir

- 50% Sylvaner
- 12.5% each of:
  - i. Cab Sauv; Carignane; Chardonnay
- Mid-season bloom and maturity
- High tannin content
- Potential as red blending grape with Cabernet Sauvignon
- 97% *Vitis vinifera*



# PD tolerant scions - White Grapes

## 1. Ambulo Blanc

- 62.5% Cab Sauv; 12.5% Carignane & Chard
- Highly productive
- Wines are similar to Sauvignon blanc
- 97% *Vitis vinifera*

## 2. Caminante Blanc

- 62.5% Cab Sauv; 12.5% Carignane & Chard
- Small berries and small clusters
- Late bloom and mid-season maturity
- 97% *Vitis vinifera*



# GRN Rootstocks



# Designed for pest tolerance

- Released in 2008
- Multiple parent vines
- GRN – 1 to 5
- Tolerant to feeding from:
  - Dagger nematode
  - Ring nematode
  - Root-Knot nematode
  - Citrus nematode
  - Lesion nematode

# GRN-1

- **Cross of:**
  - *V. rupestris*
  - *Muscadinia rotundifolia*
- **Performs moderately**
  - Low vigor in scion
  - Tested for fanleaf virus
  - Most nematode resistant
- **Resistance to:**
  - Dagger nematode
  - Root-knot nematode
  - (maybe) Fanleaf Virus

# GRN-2

- **Cross of:**
  - *V. rufotomentosa*
  - *V. champinii* 'Dog Ridge'
- **Performs moderately**
  - Long shoots w/ few laterals
  - Shallow roots
  - Good scion vigor
- **Resistance to:**
  - Dagger nematode
  - Root-knot nematode

# GRN-3

- **Cross of:**
  - *V. rufotomentosa*
  - *V. champinii* 'Dog Ridge'
  - *V. monticola* 'c9038'
- **Performs well in California**
  - Induces moderate vigor in scion
  - Yields are comparably high
  - Drought and mineral tolerance
- **Resistance to:**
  - Dagger nematode
  - Ring nematode

# GRN-4

- **Cross of:**
  - *V. rufotomentosa*
  - *V. champinii* 'Dog Ridge'
  - *V. monticola* 'c9038'
- **Performs moderately**
  - Moderate vigor in scion
  - Yields are moderate
  - Roots well (propagation)
- **Resistance to:**
  - Dagger nematode
  - Root-knot nematode
  - Citrus nematode
  - Lesion nematode

# GRN-5

- **Cross of:**
  - Several species
  - *V. champinii* 'Ramsey'
  - *V. champinii* X *V. berlandieri* 'c9021'
- **Performs moderately**
  - Moderate vigor in scion
  - Yields are moderate to low
  - Supports most phylloxera of GRNs
- **Resistance to:**
  - Dagger nematode
  - Root-knot nematode
  - Citrus nematode
  - Lesion nematode