Walnut Blackline:
New Options

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Walnut Blackline:
New Options

Walnut Improvement Program

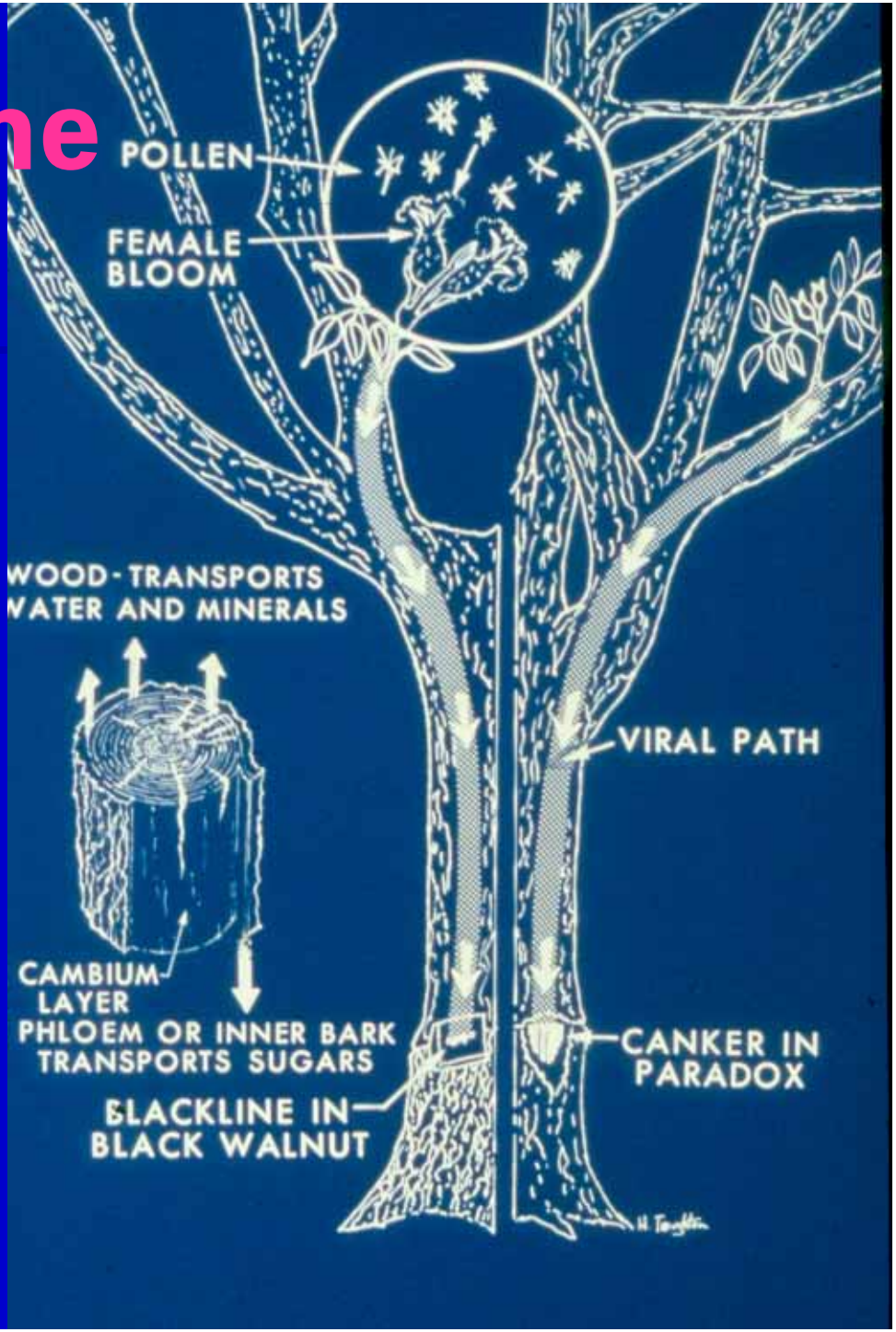
University of California, Davis

Breeder: Dr. Gale McGranahan

1. **Hypersensitive Varieties**
2. **Tolerant Rootstocks**

Walnut Blackline Disease

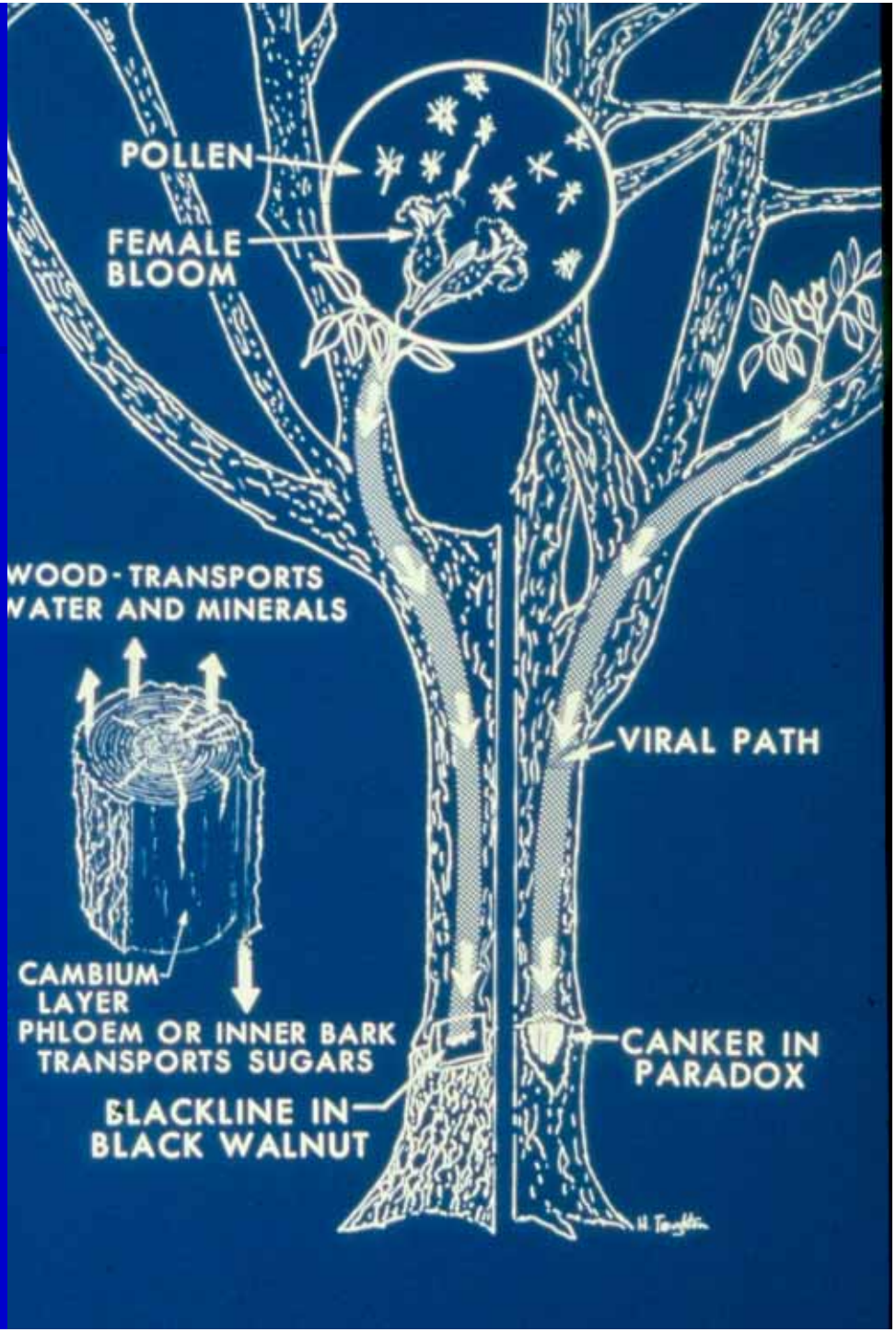
- Cherry leafroll virus
- Infected pollen
- Infects female bloom
- Virus enters tree
- English is tolerant
  - No symptoms
- Black/Paradox are hypersensitive
  - Virus kills cells at union



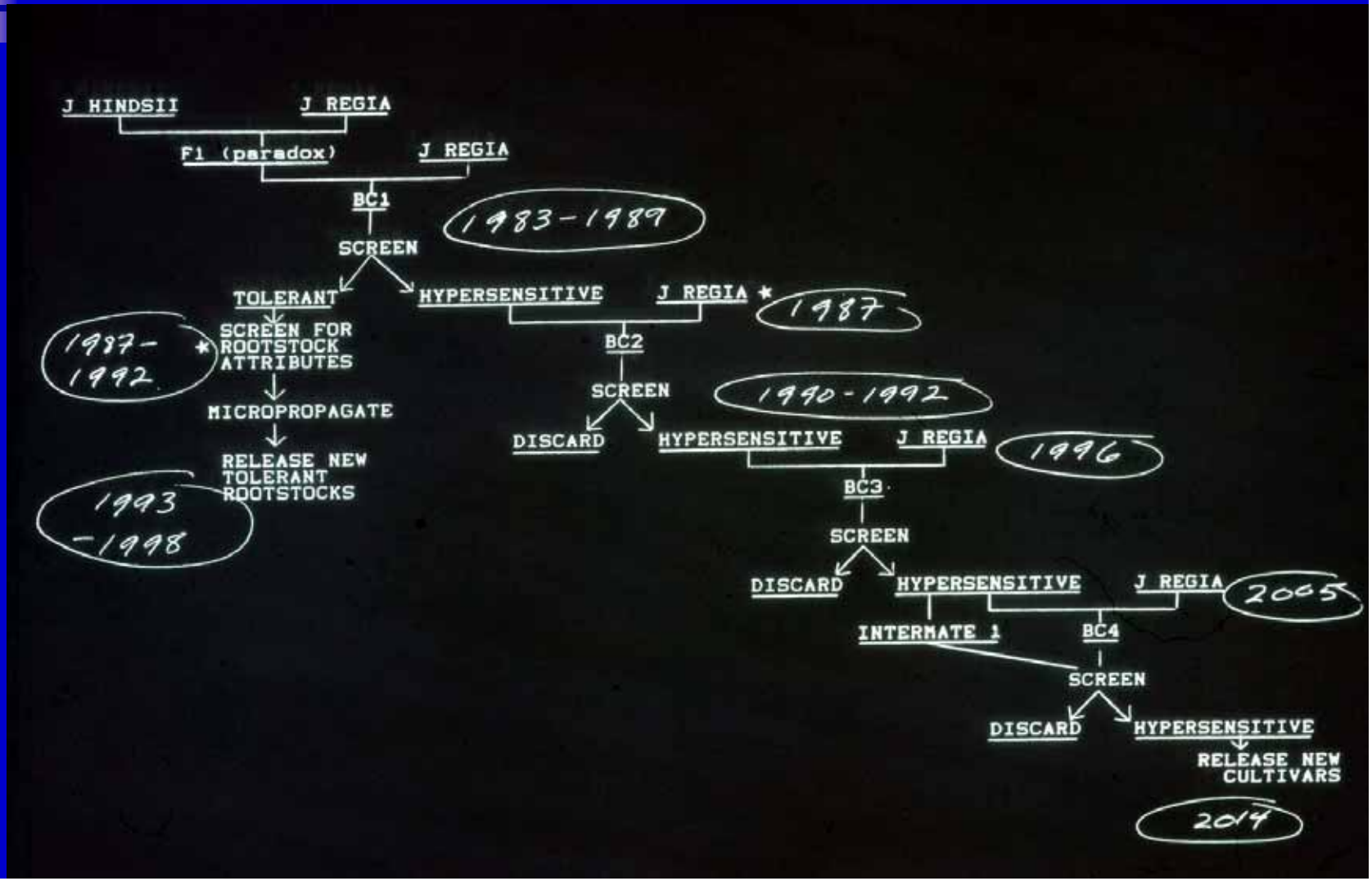
Walnut Blackline Disease

Walnut Blackline Solutions

1. Hypersensitive Cultivars: won't let the virus in
   - Plant on any rootstock
2. Tolerant Rootstocks: does let the virus in
   - Plant any cultivar

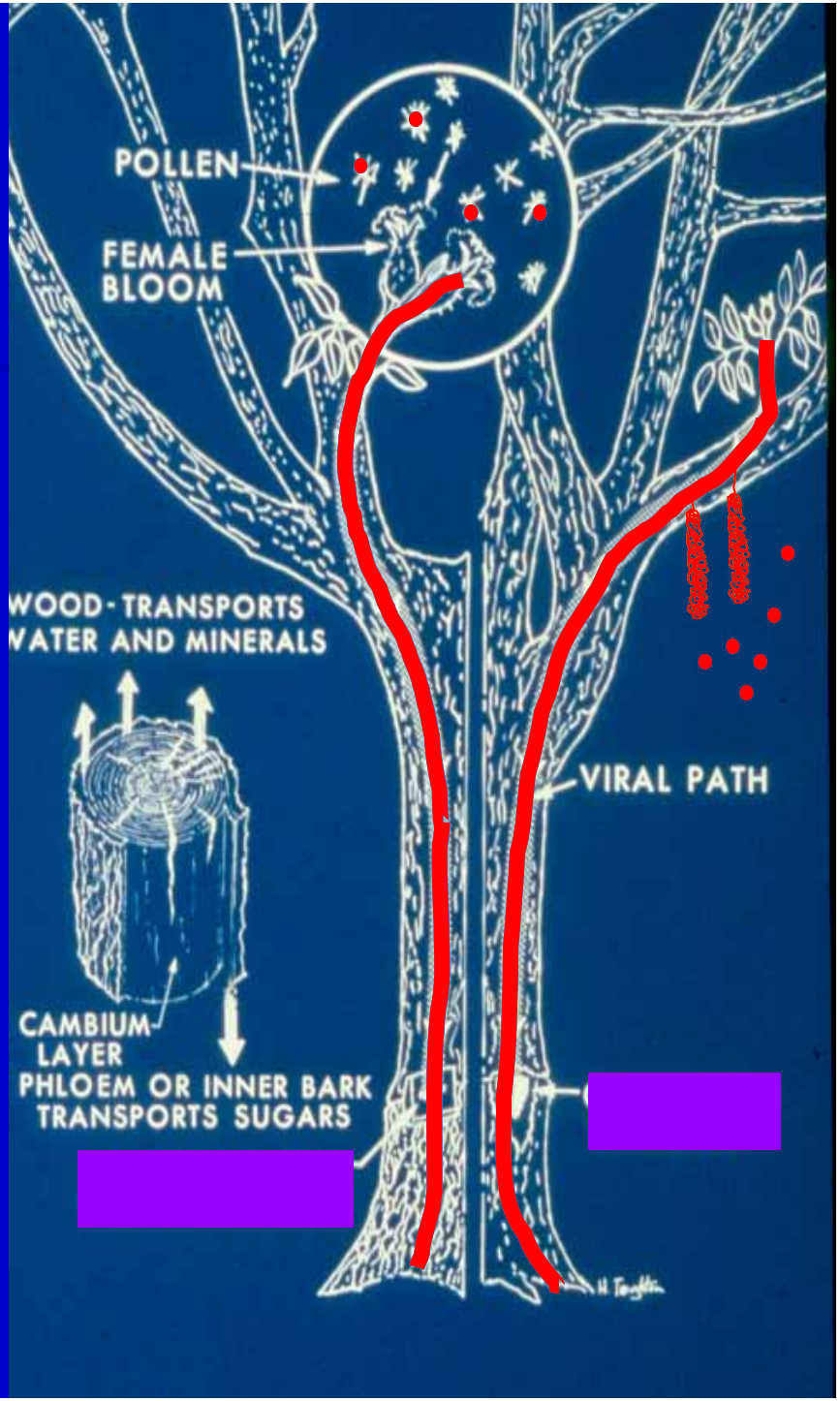


Walnut Improvement Program
Backcross Breeding Plan



Tolerant Rootstocks

- WIP Goal: a better tolerant rootstock than English
  - More vigor, disease resistance, soil variability tolerance
- Completely infected without symptoms (Typhoid Mary)
  - Best used in heavily infected areas
- Need to be clonally propagated
  - micropropagation



Micropropagation of clonal rootstock

Duarte Nurseries

- 700 WIP test trees available 2007
- commercially available in 2008??

Blackline Tolerant Rootstock Trials

San Benito Co

Farm Advisor: Bill Coates

April 2005

Contra Costa County

Farm Advisor: Janet Caprile

Cooperator: Jerry Tennant, Houston Orchards

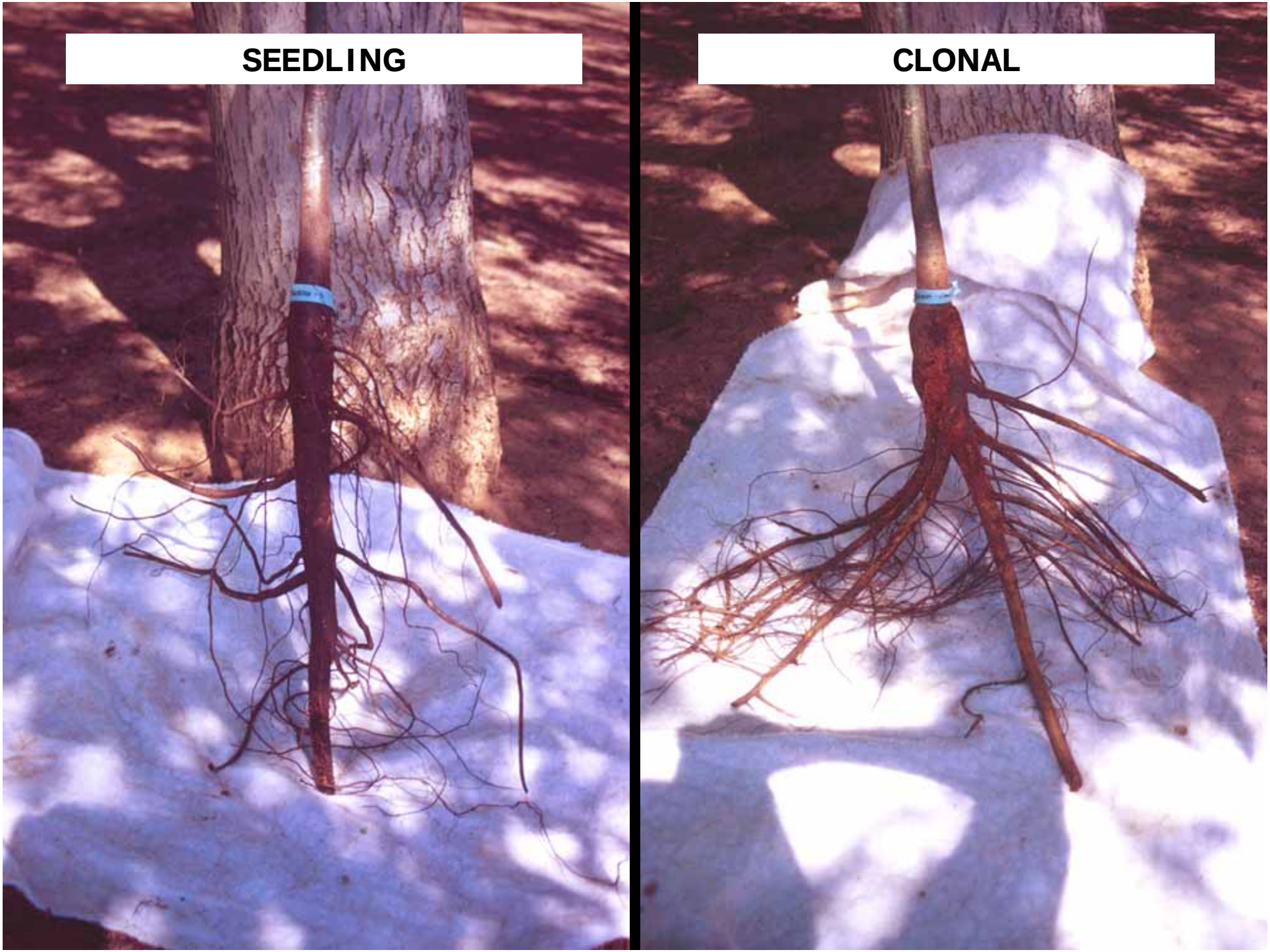
April 2005

Blackline Tolerant Rootstock Trial

Contra Costa County

ROOTSTOCKS

WIP2	clonal	[(Black x English) x English] ...
WIP3	clonal	[(Black x English) x English] ...
Paradox	clonal	Black X English
Paradox	seedling	Black X English
Sunland	clonal	English
Vina	clonal	English


SEEDLING
CLONAL

Blackline Tolerant Rootstock Trial

Blackline Hypersensitive Variety Trials

San Benito Co

Farm Advisor: Bill Coates

2001 - 2005

Contra Costa County

Farm Advisor: Janet Caprile

Cooperator: Jerry Tennant, Houston Orchards

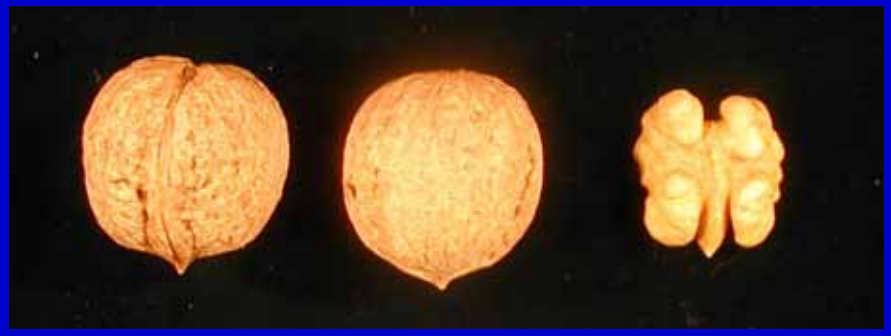
April 2005

Hypersensitive Selections

97-27-55: small kernels (6.4g), color varies, 53% kernel, watch seals

95-29-4: small kernels (6.6g), 55% kernel, color varies, nut inshell unattractive, moderate to good yield

92-16-1: small plump kernels, (6.9g), light colored, 50% kernel, mid-season, moderate to good yield, some blight



Blackline Hypersensitive Variety Trial

Future Data:

- Response to infected pollen
- Potential for breeding program
  - nut characteristics
  - growth
  - yield
  - basic phenology