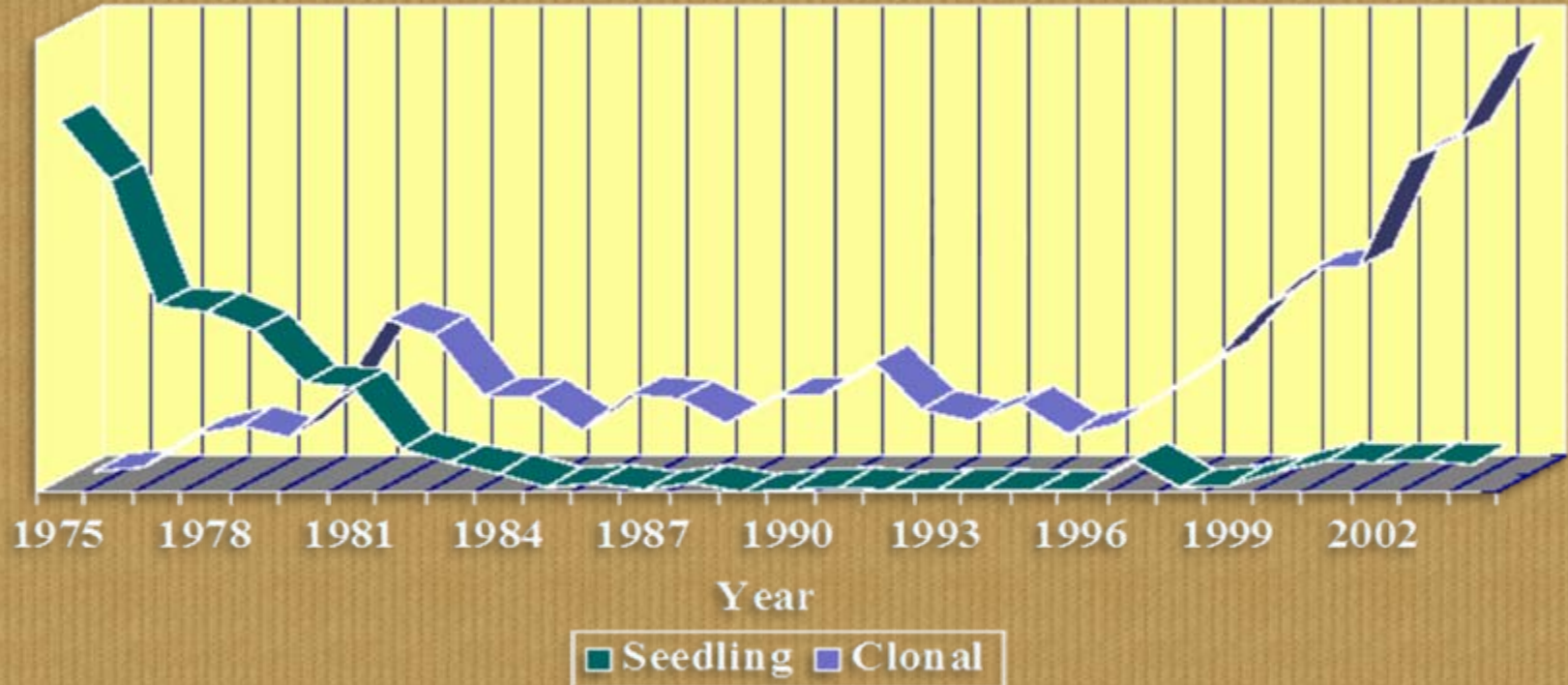




Commercial Clonal Rootstocks In California

Larry Rose
Brokaw Nursery LLC
Field Consultant
Saticoy, California, USA

Clonal vs Seedling Trees



Uniform Characteristics

- Phytophthora cinnamomi Tolerance



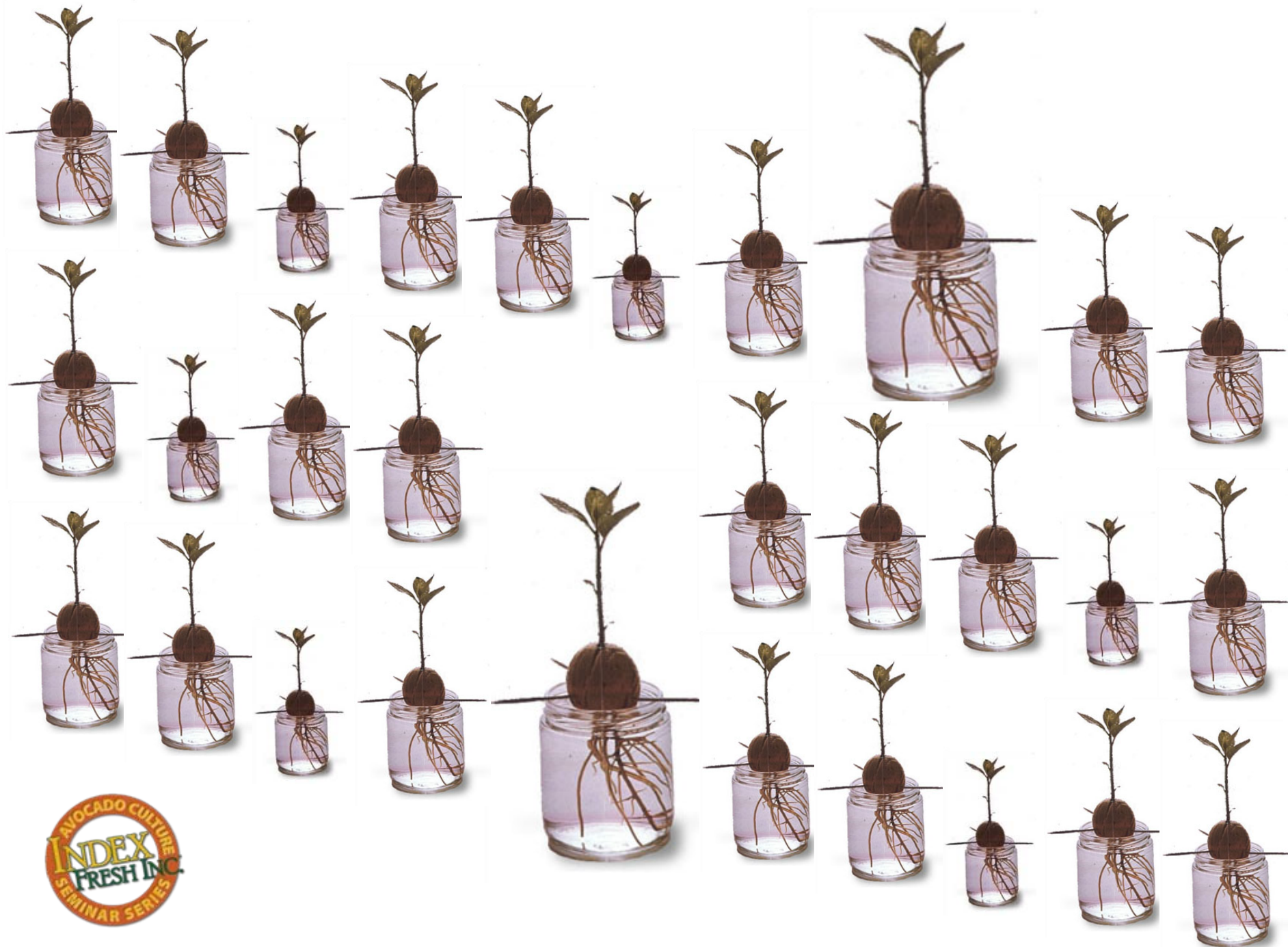
Uniform Characteristics

- Phytophthora cinnamomi Tolerance
- Tree Uniformity

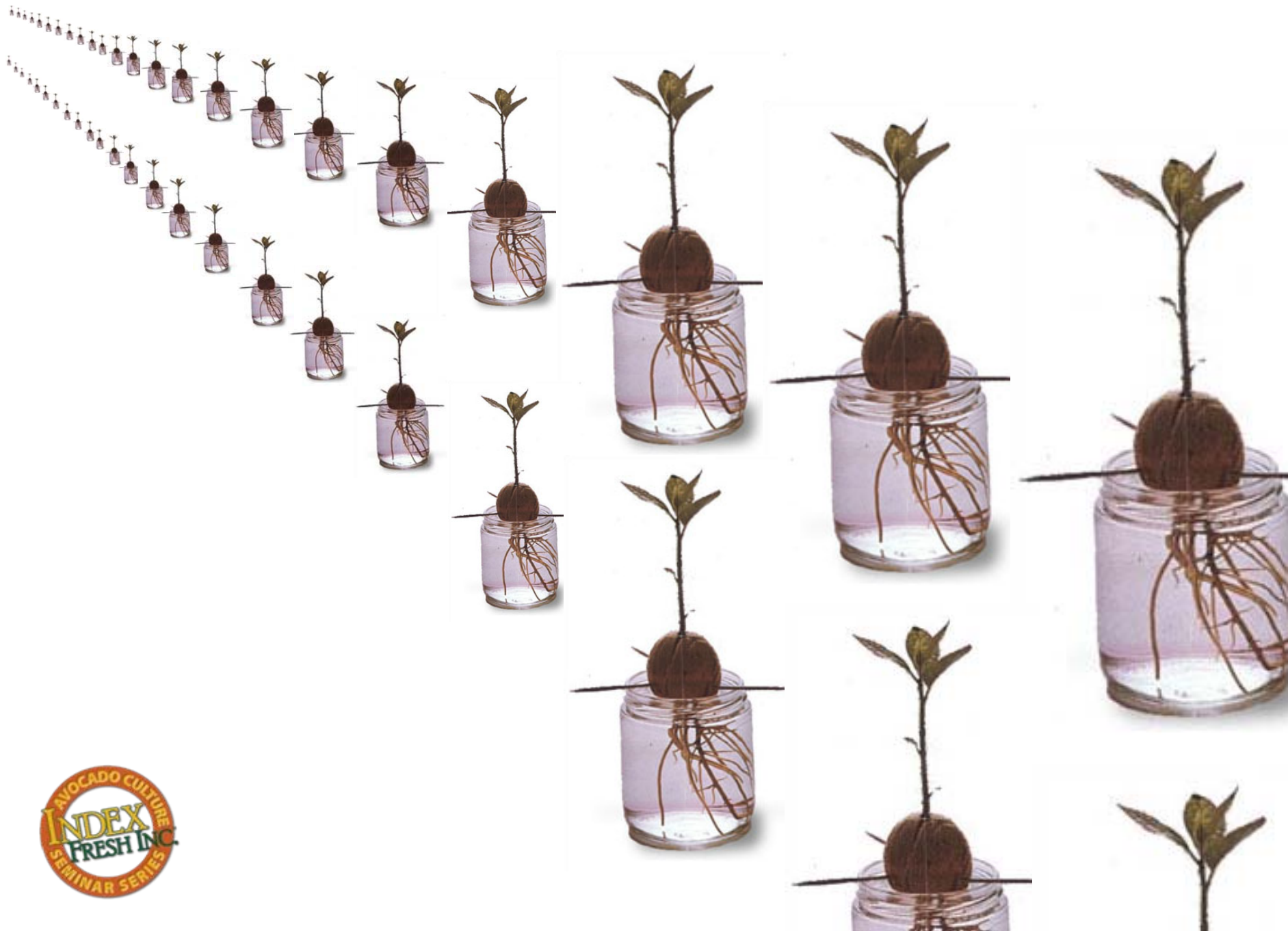










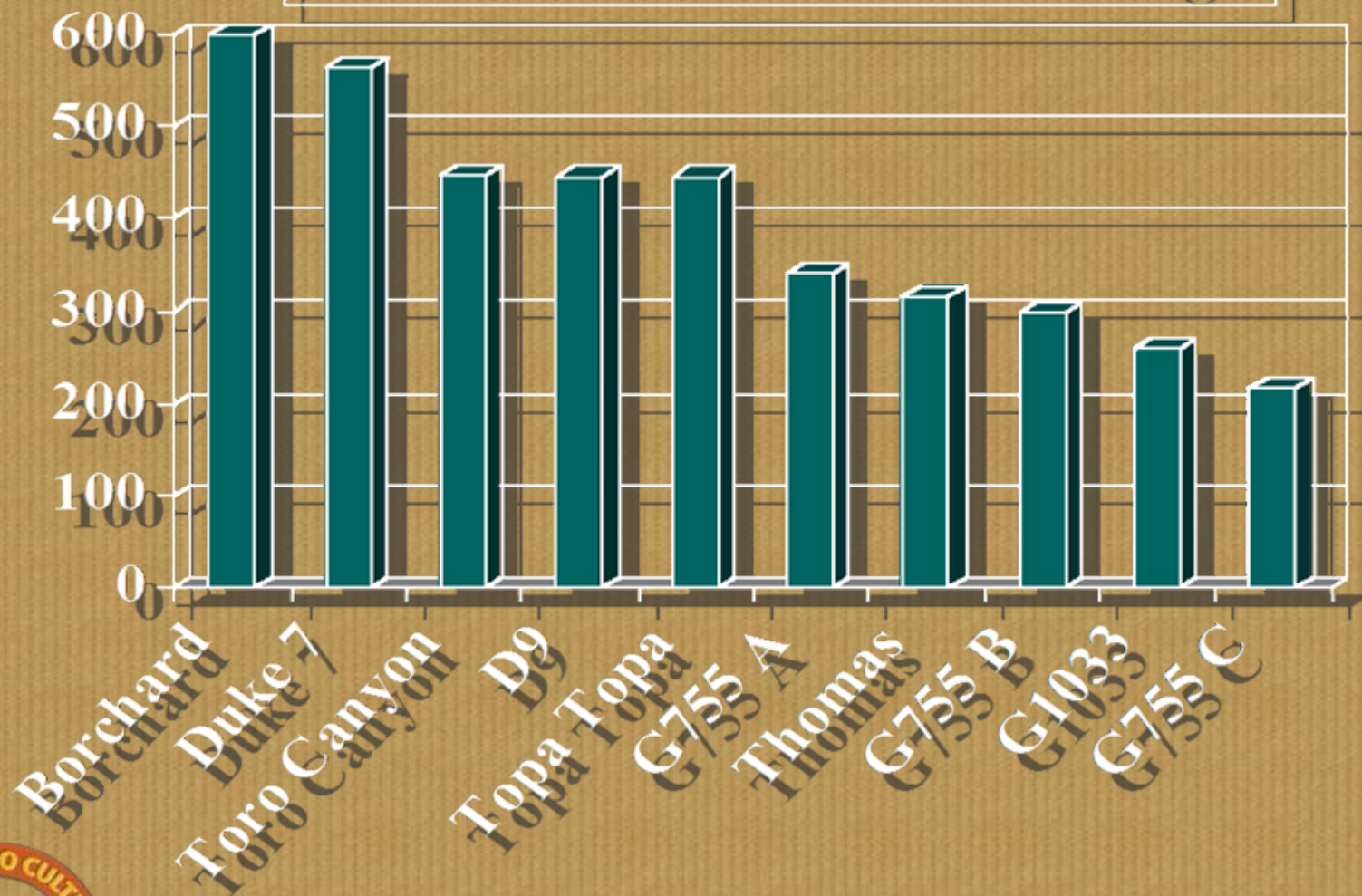


Uniform Characteristics

- Phytophthora cinnamomi Tolerance
- Tree Uniformity
- Fruit Productivity



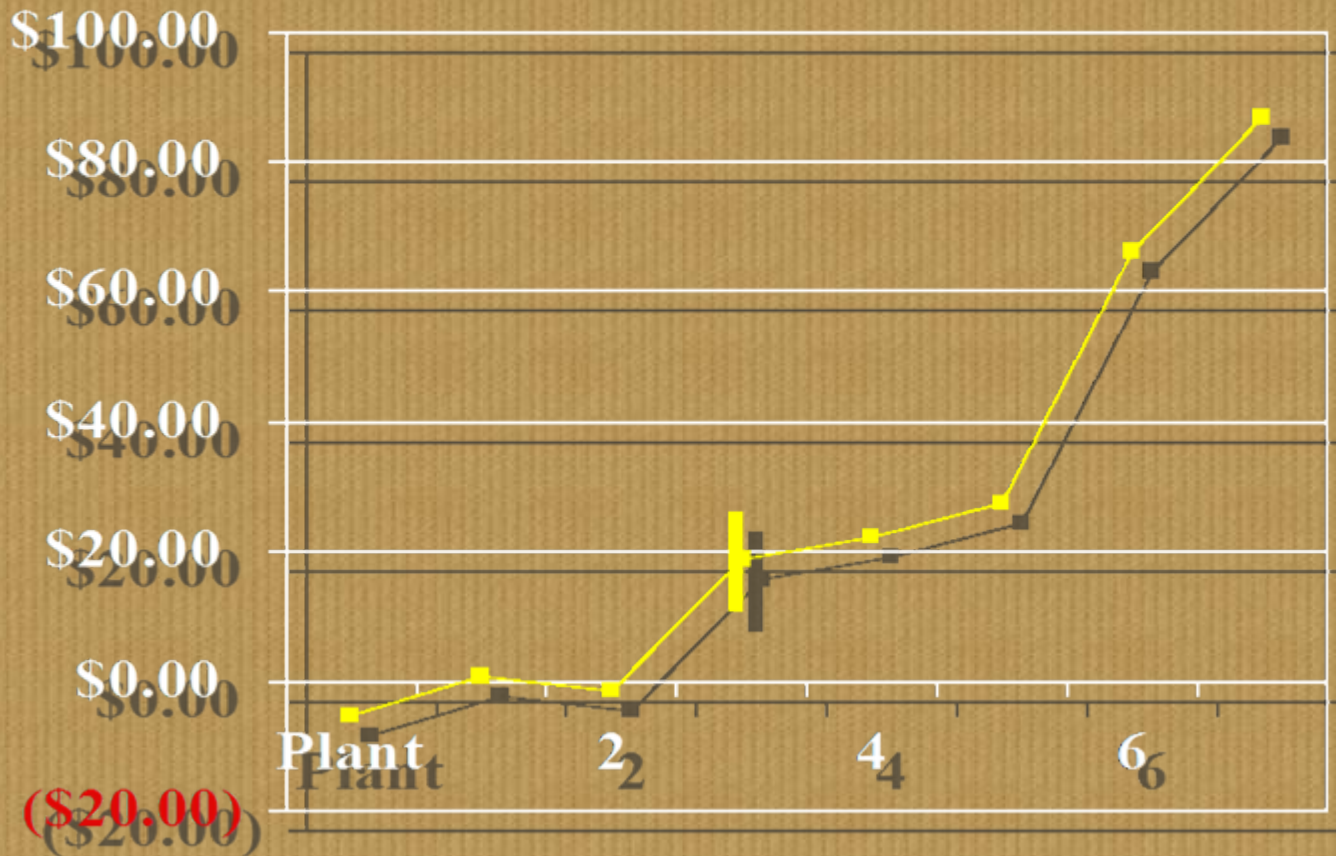
■ 8 Year Cumulative Yield kgs.



Cumulative Revenue



**Cumulative Revenue Difference
Clonal vs Seedling Rootstock**

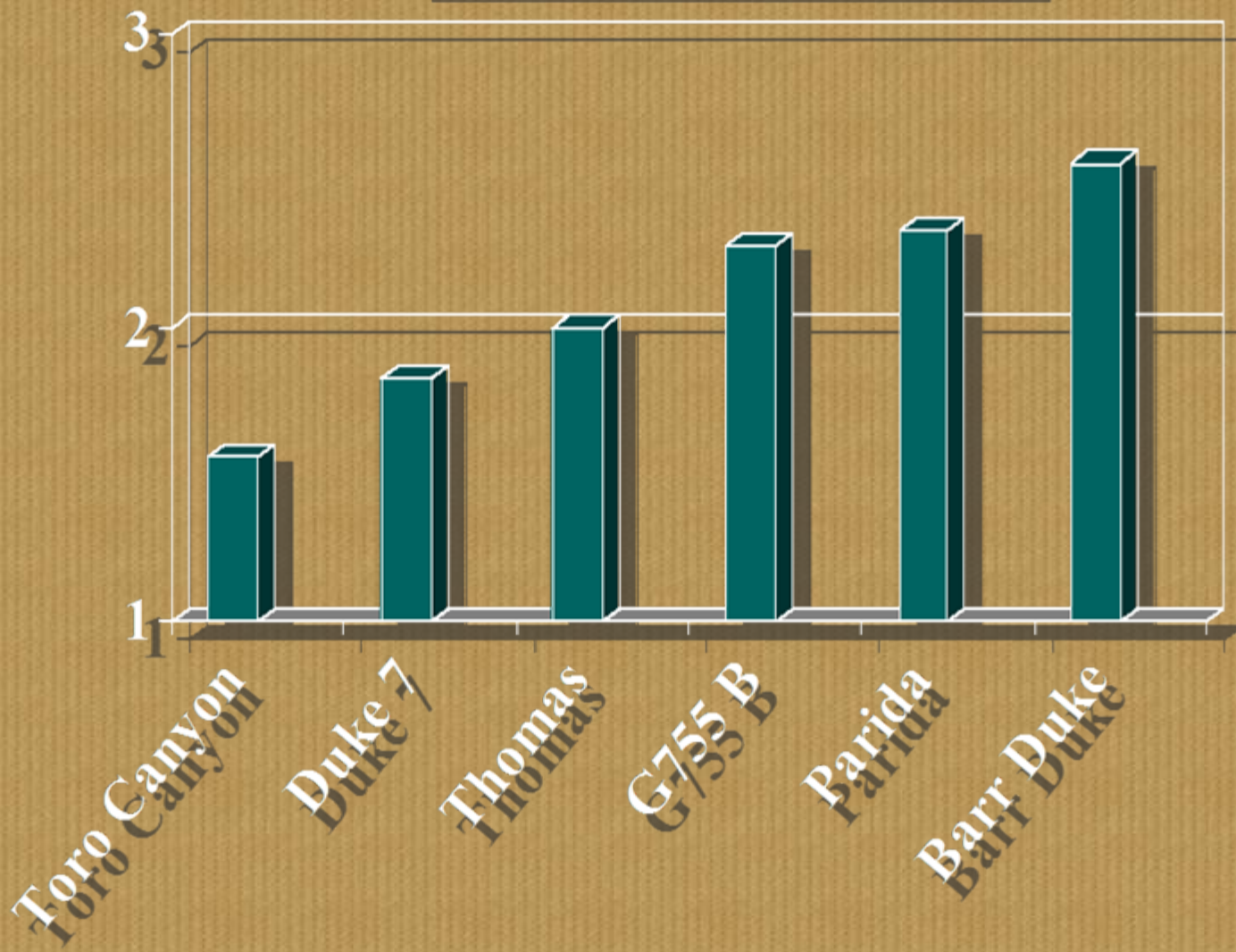


Uniform Characteristics

- Phytophthora cinnamomi Tolerance
- Tree Uniformity
- Fruit Productivity
- Salinity Tolerance/Resistance



Salinity Visual Rating
1 = Best 5 = Dead



Uniform Characteristics

- Phytophthora cinnamomi Tolerance
- Tree Uniformity
- Fruit Productivity
- Salinity Tolerance/Resistance
- Iron Chlorosis Resistance



Uniform Characteristics

- Phytophthora cinnamomi Tolerance
- Tree Uniformity
- Fruit Productivity
- Salinity Tolerance/Resistance
- Iron Chlorosis Resistance
- Resistance to Other Fungal Diseases



Uniform Characteristics

- Phytophthora cinnamomi Tolerance
- Tree Uniformity
- Fruit Productivity
- Salinity Tolerance/Resistance
- Iron Chlorosis Resistance
- Resistance to Other Fungal Diseases
- Absorption of Nutrients





Isolated Replants and Irregular Care

Clonal vs Seedling Structure



Clonal vs Seedling Structure



Clonal vs Seedling Structure





Integrated Disease Control

Five principal factors:

- 1. Nursery practice**
- 2. Cultural practice**
- 3. Clonal rootstocks**
- 4. Biological control**
- 5. Chemical control**



Integrated Disease Control

Five principal factors:

1. Nursery practice
2. Cultural practice
3. Clonal rootstocks
4. Biological control
5. Chemical control





**Cultural practices, Biological control,
Chemical control**



**Cultural practices, Biological control,
Chemical control**



**Cultural practices, Biological control,
Chemical control**



**Cultural practices, Biological control,
Chemical control**



**Cultural practices, Biological control,
Chemical control**



**Cultural practices, Biological control,
Chemical control**



**Cultural practices, Biological control,
Chemical control**



Duke 7

Production
Vigor
Salinity
P. citricola
Root Rot



Root Rot

Toro Canyon

Root Rot
Production
Salinity
Vigor
Root Mass
P. citricola



Root Rot

Borchard

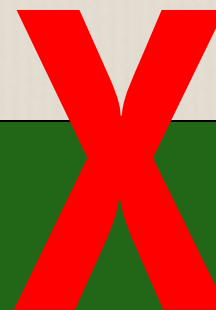
Iron
Chlorosis
Production
Vigor
Salinity



Root Rot
Large Tree
Size

G755

Root Rot
Vigor



Production
Cold
Salinity
P. citricola

Thomas

Root Rot
Vigor



X

Salinity
Production
Dothiorella
Large Tree
Size

Dusa

Root Rot
Production
Salinity
Vigor



Poor
Aeration
Chlorosis

Latas

Root Rot
Salinity
Production



Poor
Aeration
Chlorosis



