

California Pistachio Rootstock Update

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What is a rootstock?

- *The trunk or root material to which scion is inserted*





Why use a rootstock ?

- Cold tolerance
- Diseases or pests *
- Soil and water quality
- Enhance scion performance

What are California rootstocks ?

Family Anacardiaceae Genus *Pistacia*:
Species: (16)

Pistacia vera





California Rootstocks

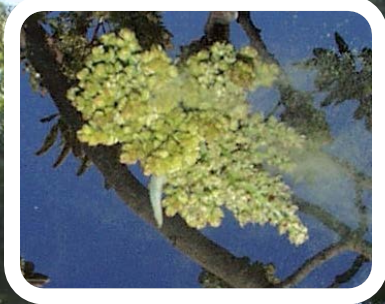
- *P. terebinthus* = Terebinthus
- *P. atlantica* = Atlantica
- *P. integrerrima* = Pioneer Gold I = PGI
- *P. atlantica* X *P. integrerrima*
 - UC Berkeley I: UCB I
- *P. integrerrima* X *P. atlantica*
 - Platinum

How are rootstocks made ?

- Sexually: pollination to produce seeds
 - Seedling rootstock
- Asexually: tissue culture
 - Clonal rootstock

Seedling rootstocks:

- **Pollination**
 - **Open**
 - **Controlled**
- **Collect Seeds**
- **Germinate Seeds**



P. integerrima



P. atlantica

P. integerrima



P. atlantica

















P. atlantica X *P. integerrima* (S)



P. integerrima (S)



P. atlantica X *P. integerrima* (S)

www.ART-ALTERNATIVES.COM







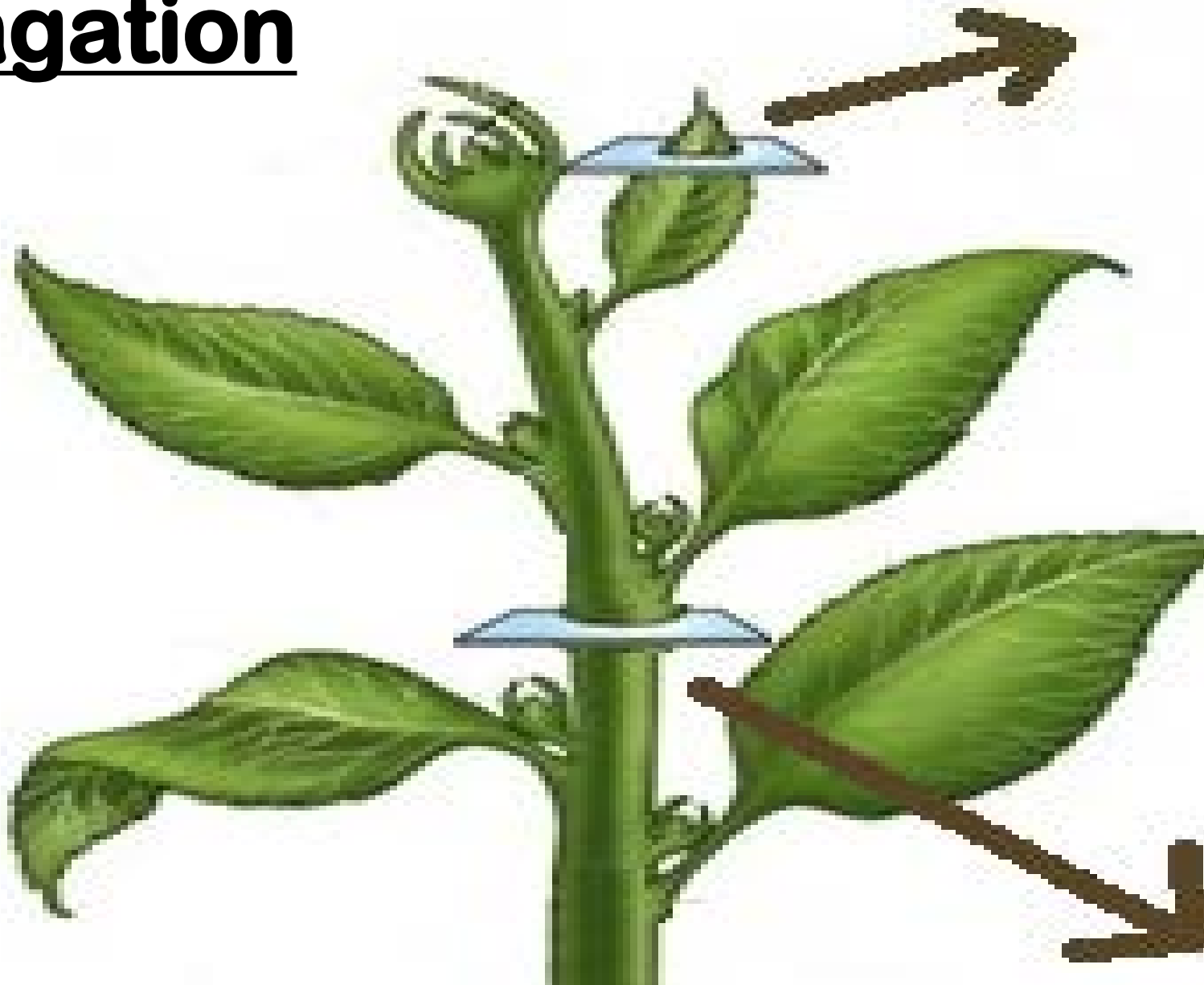


Seedling Rootstocks:

- *Advantage*
Variability
- *Disadvantage*
Diversity
- *Pool for superior individuals*
for clonal propagation



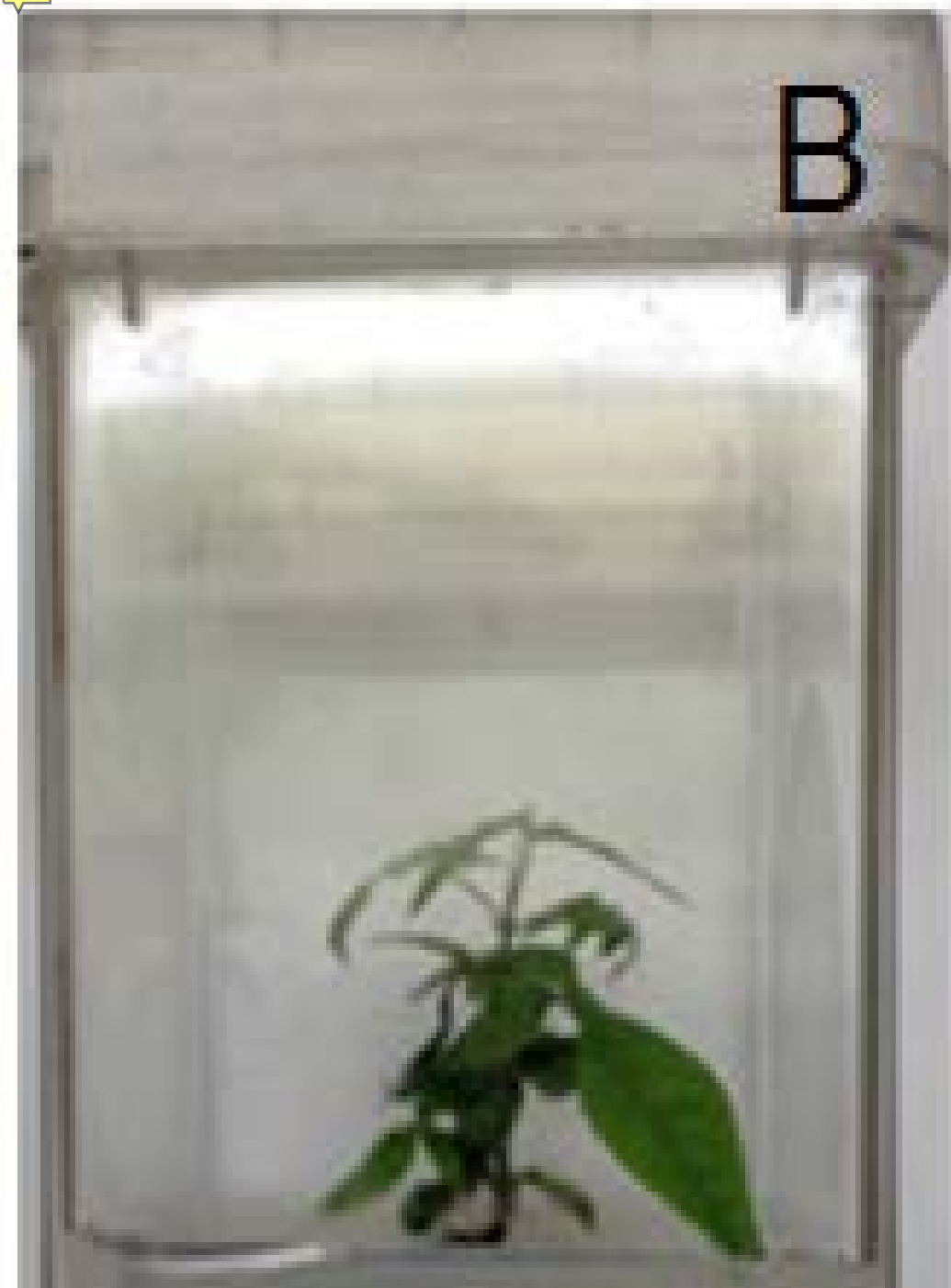
Clonal Propagation







B



C







3 x 3 x 7"



3 x 3 x 7"





P. integrifolia X *P. atlantica* ©





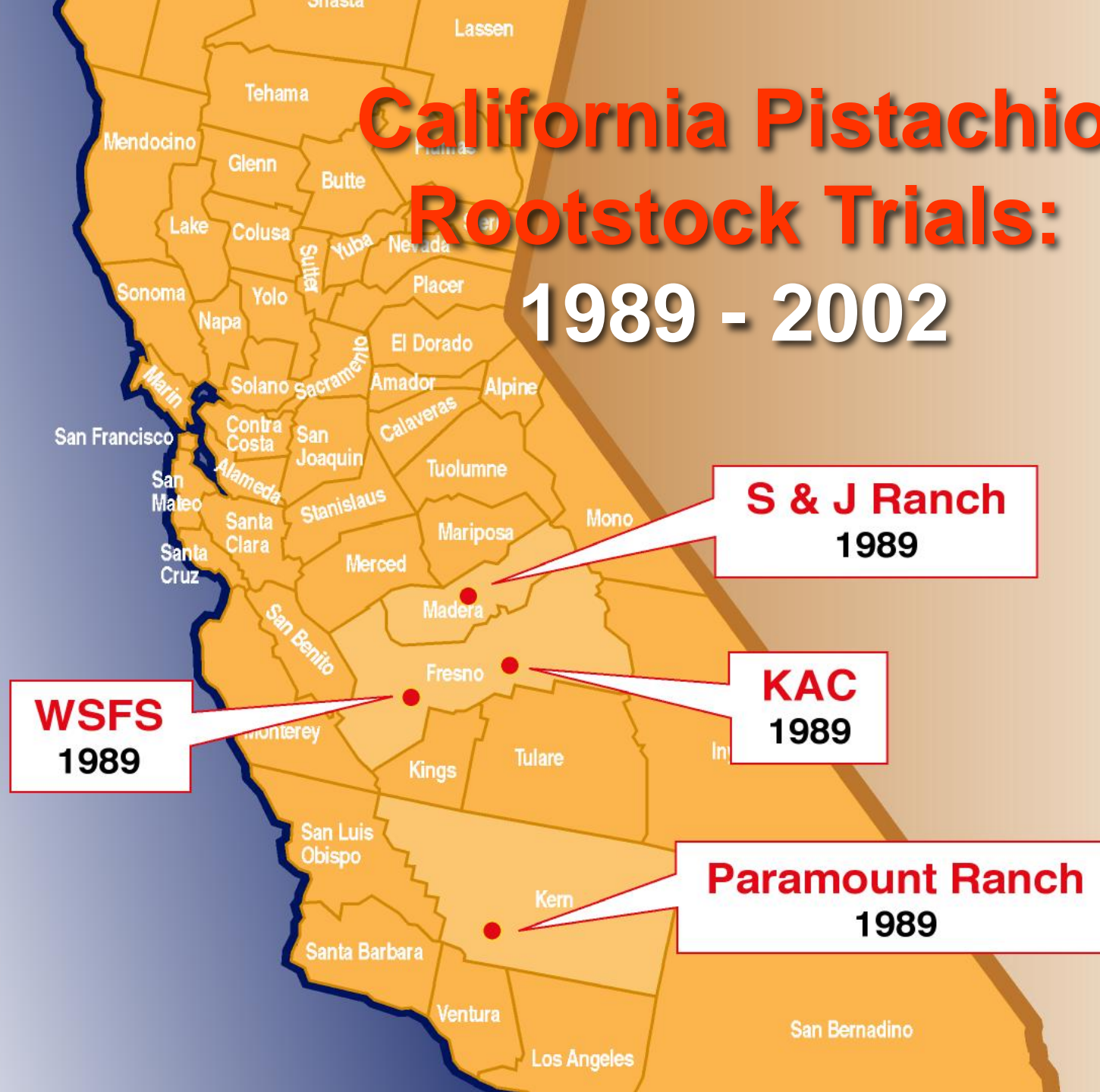
Clonal Rootstocks:

- *Advantage*
Uniformity
- *Disadvantage*
Uniform susceptibility
- *Environmental stresses,
pests and pathogens*

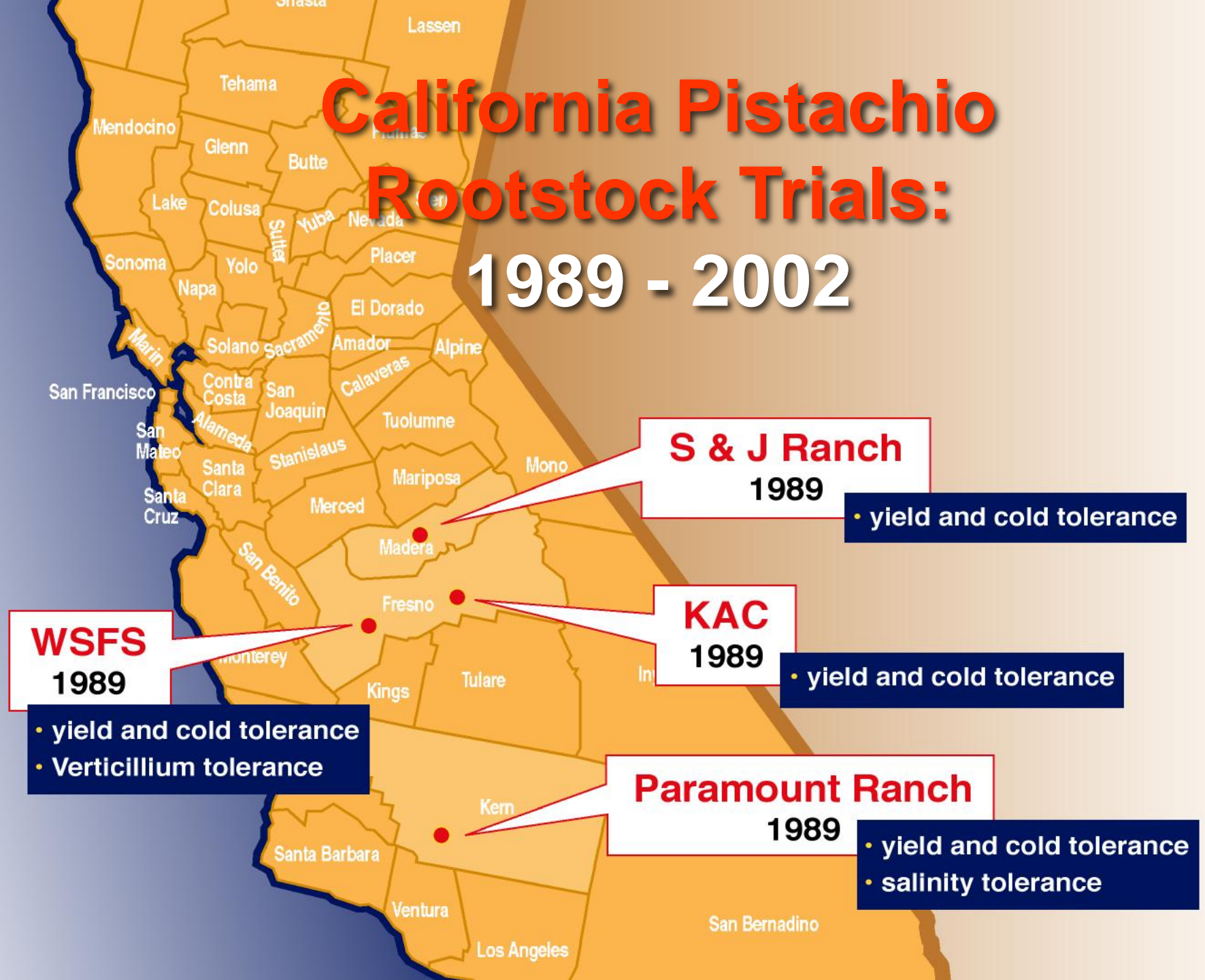
The background of the slide features a close-up photograph of a plant. In the upper half, there are clusters of small, green, unopened flower buds. Below these, several white flowers are in various stages of bloom, with some showing pinkish-red centers. The overall image is slightly blurred and has a soft, naturalistic feel.

How have we evaluated California rootstocks?

California Pistachio Rootstock Trials: 1989 - 2002



California Pistachio Rootstock Trials: 1989 - 2002





Atlantica

PG II

PGI

UCBI

San Joaquin Valley Pistachio Rootstock Trials 1989 - 2002

Rootstock	Limiting Factor			
	Frost	Yield	Salinity	Vert.
<i>P. integerrima</i>	4	2	3	1
<i>P. atlantica</i>	1	4	1	3
PGII	3	3	2	4
UCB1	2	1	2	2

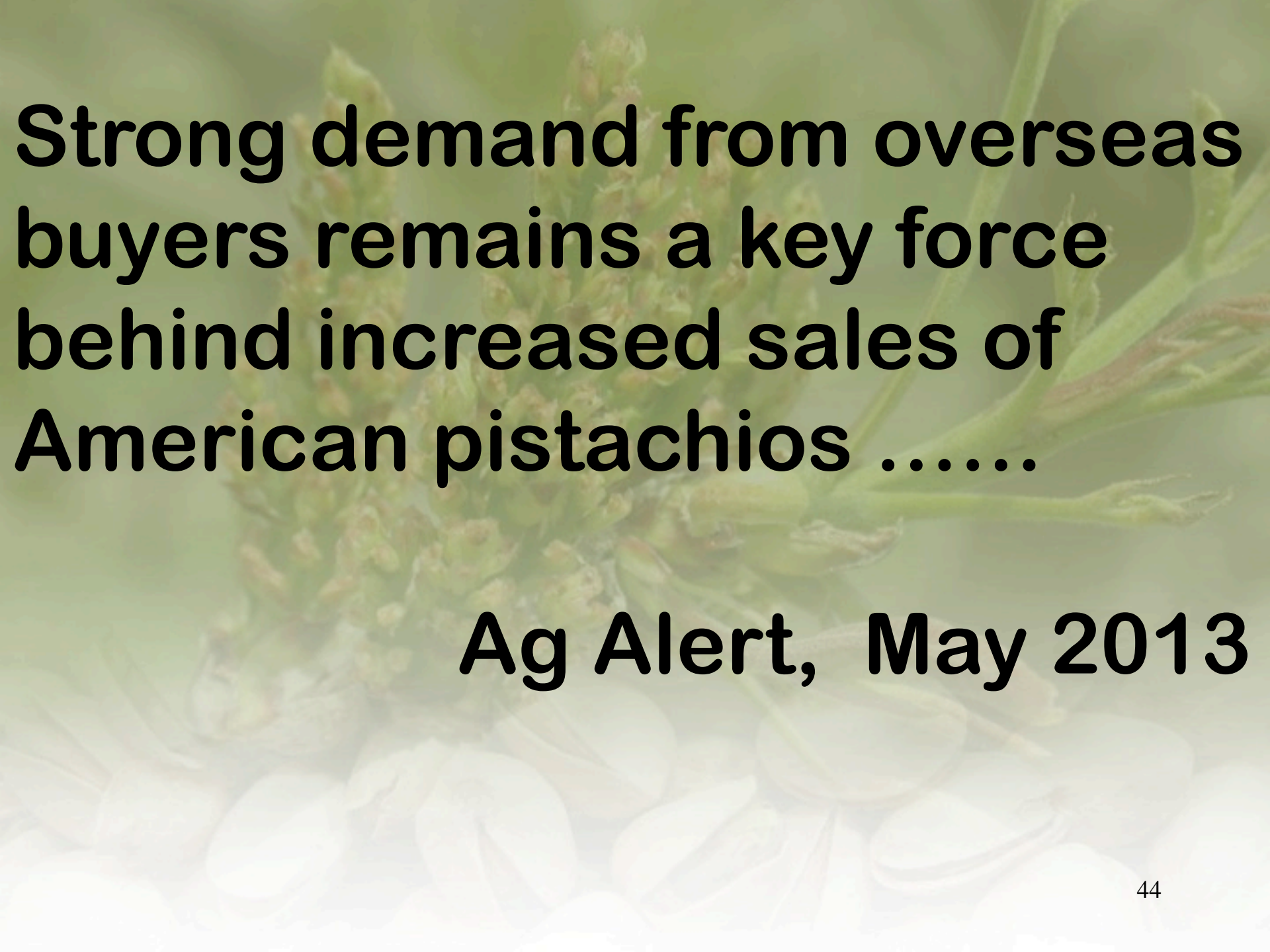
Alternate Bearing: $0 - 1 = 0.67$

Ag Alert, Dec. 2007

“Grower Mark Watte is seeing a major shift from cotton production to permanent crops like pistachios....”

6/6/2018



The background of the slide features a close-up, slightly blurred image of a pistachio plant. In the upper half, there are green, spiky pistachio catkins. In the lower half, there is a pile of shelled pistachio nuts, showing their characteristic light green color and smooth texture.

Strong demand from overseas buyers remains a key force behind increased sales of American pistachios

Ag Alert, May 2013

300,000 acres



A close-up photograph of a lavender plant with green stems and small, developing flower buds. The plant is set against a background of white, smooth, rounded stones. The overall image has a soft, slightly blurred quality.

Rootstock Problems?

**Freeze
+/-
Sodium**



Nematodes



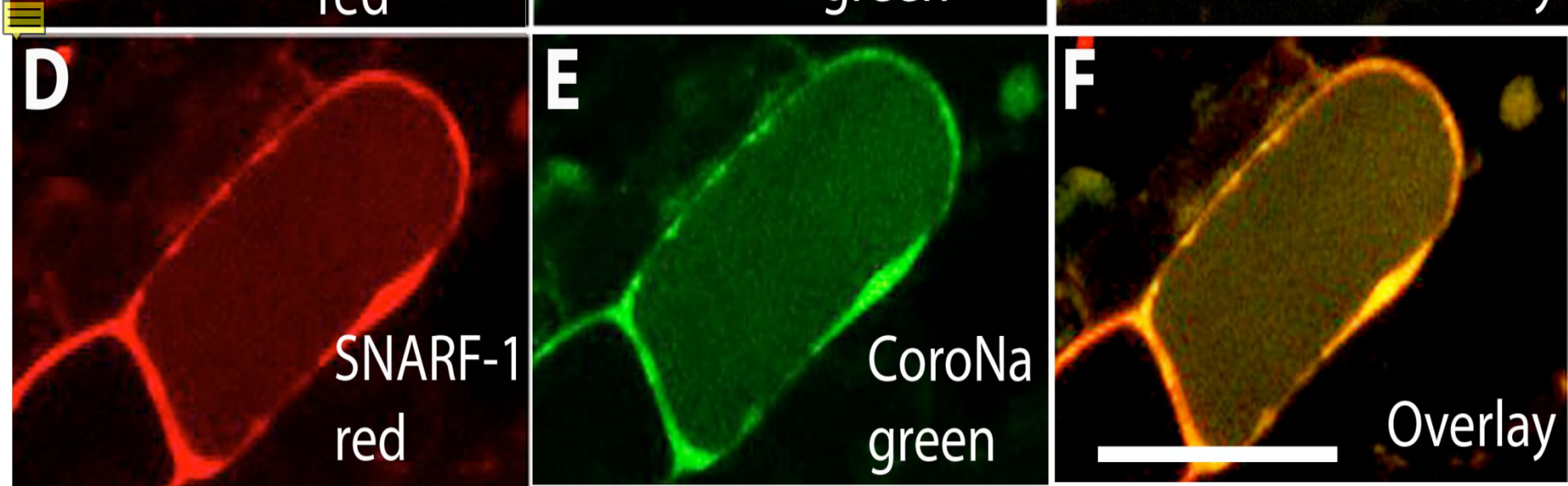
?



Current Rootstock Research

- Rootstock establishment in saline soils





- **Sodium localization in vacuoles of pistachio rootstock cells**
- **Interactions with cold**

- **Calcium to decreases sodium uptake**



- **Nematode susceptibility**





Thank You