

# Grafting Citrus Trees

California Rare Fruit Growers

West Los Angeles Chapter

June 8, 2024

# Background

- ▶ Wilbur Wood, Nurseryman
- ▶ Agnes Philpot
- ▶ California Rare Fruit Growers, Los Angeles Chapter, Bill Brandt, high school program
- ▶ UC Berkeley Botanical Gardens grafting program
- ▶ Lotusland grafting program

Citrus in Yard				
Aguzdera Satsuma	Eureka	Marrahach Lemonetta	Ponkan	Vaniglia Sanguigno
Arkay Sekeri Crescent	Fortuna Mand	Mary Ellen, Lima Dolce	Primrose Mandarin	Verigated Pink
Australian Finger Lime	Fukushu	Mato Buntan	Red	W. Murcott
Autumn Gold Navel	Gold Nugget	Meiwa Kumquat	Richard's Special	Washington Navel
AVANA TARDIVO DI CIACULLI	Harward	Melogold	Rohd Red	Washington Sanguine
Bahianinha Araras Navel	Honey	Mexican Lime/key Lime	Rojo Blanco	Wekiwa Tangelo
Barss Lime	Howard Late Valencia	Meyer	Sadachi Hybrid	Winnie's Kumquat
Bergamot	Imperial	MIHO WASE SATSUMA	Sanguinello Blood Orange	Xie Shan Satsuma
Budha Hand	Indio Mandarinquat	Minneola	Santa Barbara Tangelo	Xuegan Orange
Cal Rojo	Iveriva Satsuma	Mirisol Clemintine	Shamouti	Yosemite gold
Calamondin	Iyo Mikan	Moro Blood	Shiranui Mand.	Yuegan Blood
Cara Cara Navel	Iyomikan Tangor	Nagami	Smith Red Orange	Yuzu Ichandrin
Carte Noir	Jincheng	Navelina Navel	Soh Himtra Mandarin	Yuzu/Kansu
Carter Navel	Joao Valencia	New Zealand Lemonade	SRA 337 Mandarin	
Chandler/Reinking	Kaffir Lime	Nichigan Ichi Go satsuma	SRA 92	
China S-2	Kara Mandarin	Nova Mandarin	Sudachi Hybrid	
China' S-6 Satsuma	Kinnow Mandarin	Okitsu Wase	Sudachi-ichandrin	
China S-9	Kishu	Orlando	Sweet Lemon	
Chironja Hybrid	Kishu mini	Oro Blanco	Tahitian Pommelo	
Clementine	Kiyomi Tangor	Ortinique Tangor	Tango	
Clementine X Pearl	La Reina	Page	Torocco Blood Orange	
Clemintine Mandarin	Late Lane	Palestine Sweet Lime	Trovita	
Dancy	Late Navel	Palistine Jaffa	Ugli Tangelo	
Dessert	Late Valencia	Pearl Tangelo	USDA 1-77-19 Tangelo	
Dobashi Beni	Lee X Nova	Pixie	USDA 88-2 Mandarin	
Early Navel	Leng Navel	Pomona Sweet Lemon	USDA 88-3	
Ertog Citron		Ponkan	Vainiglia Sanguigno	
		Primrose Mandarin	Valencia	
		Red	Valencia early	
		Richard's Special	Valentine Pommelo	



# UC Riverside CCPP

- ▶ Time it takes to introduce new citrus cultivars
- ▶ California prohibition against using non-certified scion wood
- ▶ Availability of certified rootstock, how and when to order.
- ▶ Cost
- ▶ Shipping dates and method

# Concept of Grafting

- ▶ Historical background
  - ▶ First trees to be grafted
  - ▶ Roman influence
- ▶ Different methods commonly used in Citrus grafting
  - ▶ Inverted T graft
    - ▶ Easy to use
    - ▶ Requires some skill and proper tools
    - ▶ Gets the highest yield out of limited scion wood
    - ▶ Can only be used when the bark is slipping
    - ▶ Must be a perfect graft as there is only one bud used
    - ▶ Success is limited unless overcome citrus tree apical dominance of citrus trees
    - ▶ Almost impossible to know if a flowering, vegetative, or combination bud

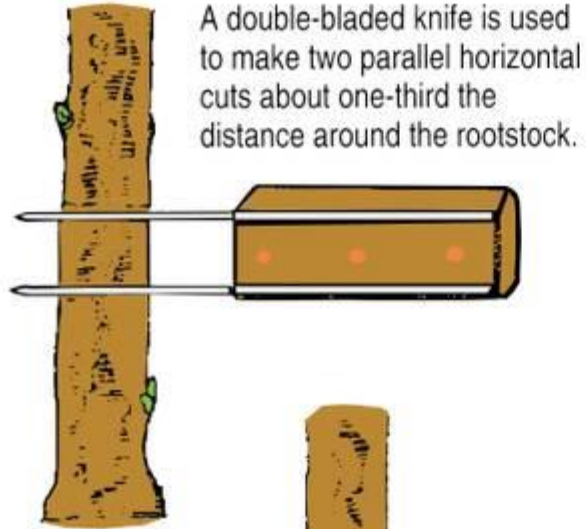


# Concept of Grafting (continued)

- ▶ Chip and patch budding manual and machine
  - ▶ Some types can be done any time of the year
  - ▶ Requires some skill and proper tools
  - ▶ High yield as in “T” graft
  - ▶ Must be a perfect graft as there is only one bud used
  - ▶ Limited success unless overcome apical dominance of citrus trees
  - ▶ Almost impossible to know if a flowering, vegetative, or combination bud

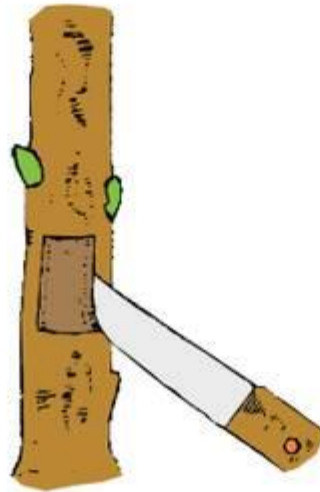


## PREPARING THE ROOTSTOCK

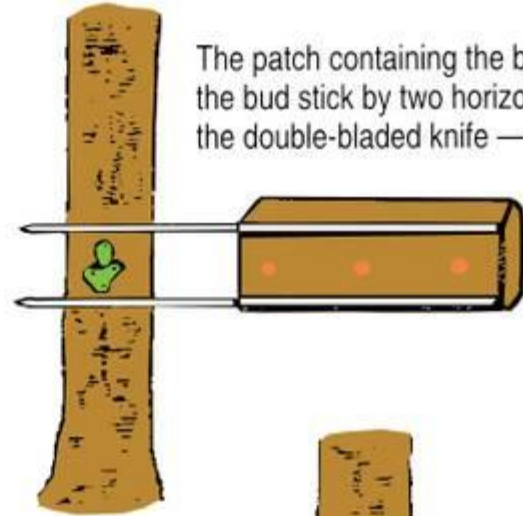


A double-bladed knife is used to make two parallel horizontal cuts about one-third the distance around the rootstock.

The two horizontal cuts are connected at each side by vertical cuts.

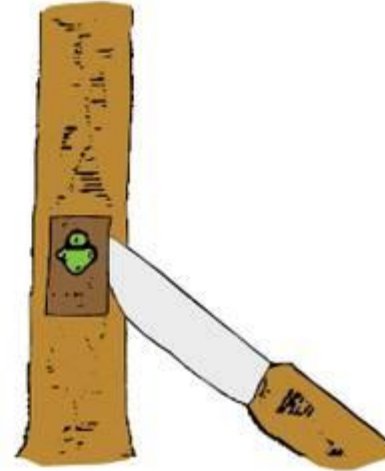


## PREPARING THE BUD

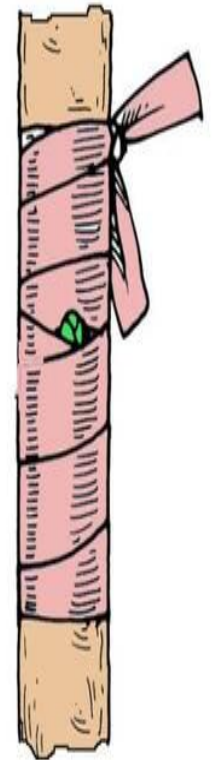
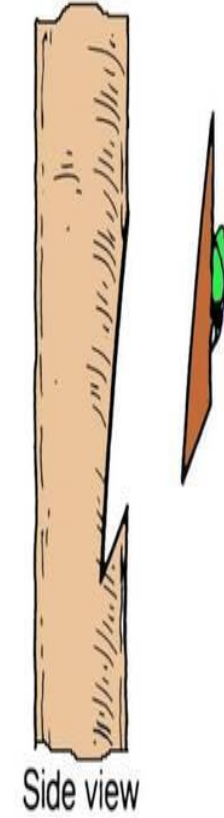
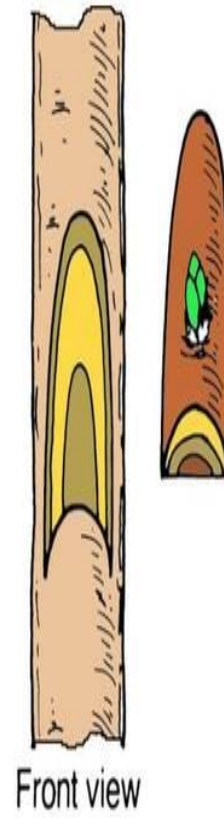
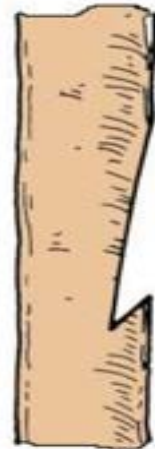
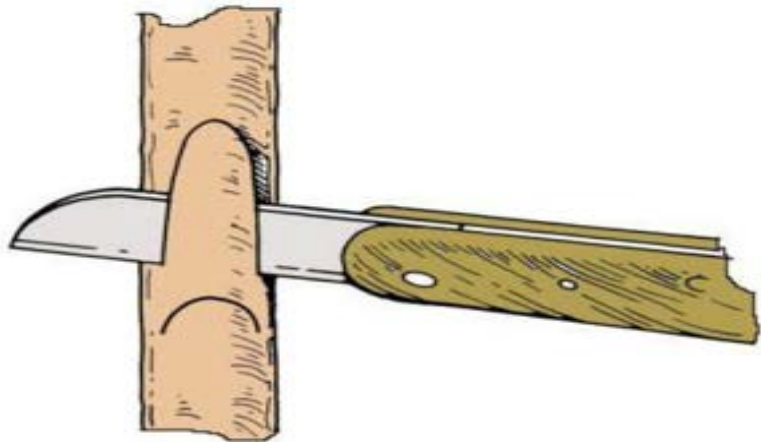
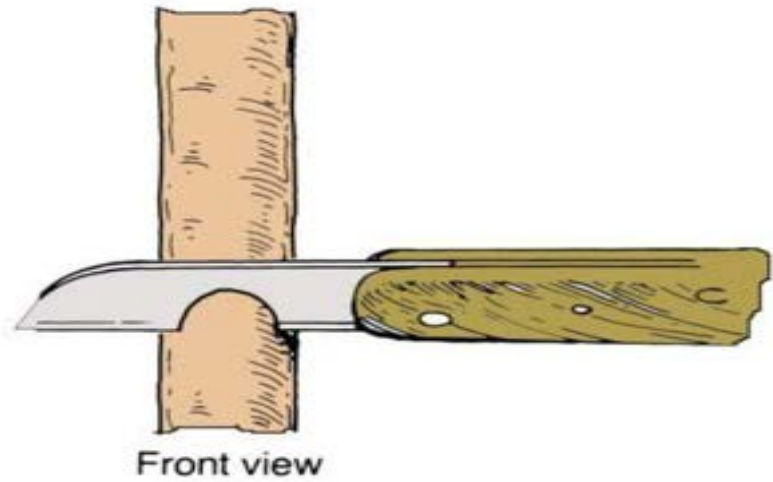


The patch containing the bud is cut from the bud stick by two horizontal cuts with the double-bladed knife —

—followed by two vertical cuts on each side of the bud. The bud patch is removed by sliding it off to one side.



## PREPARING THE STOCK

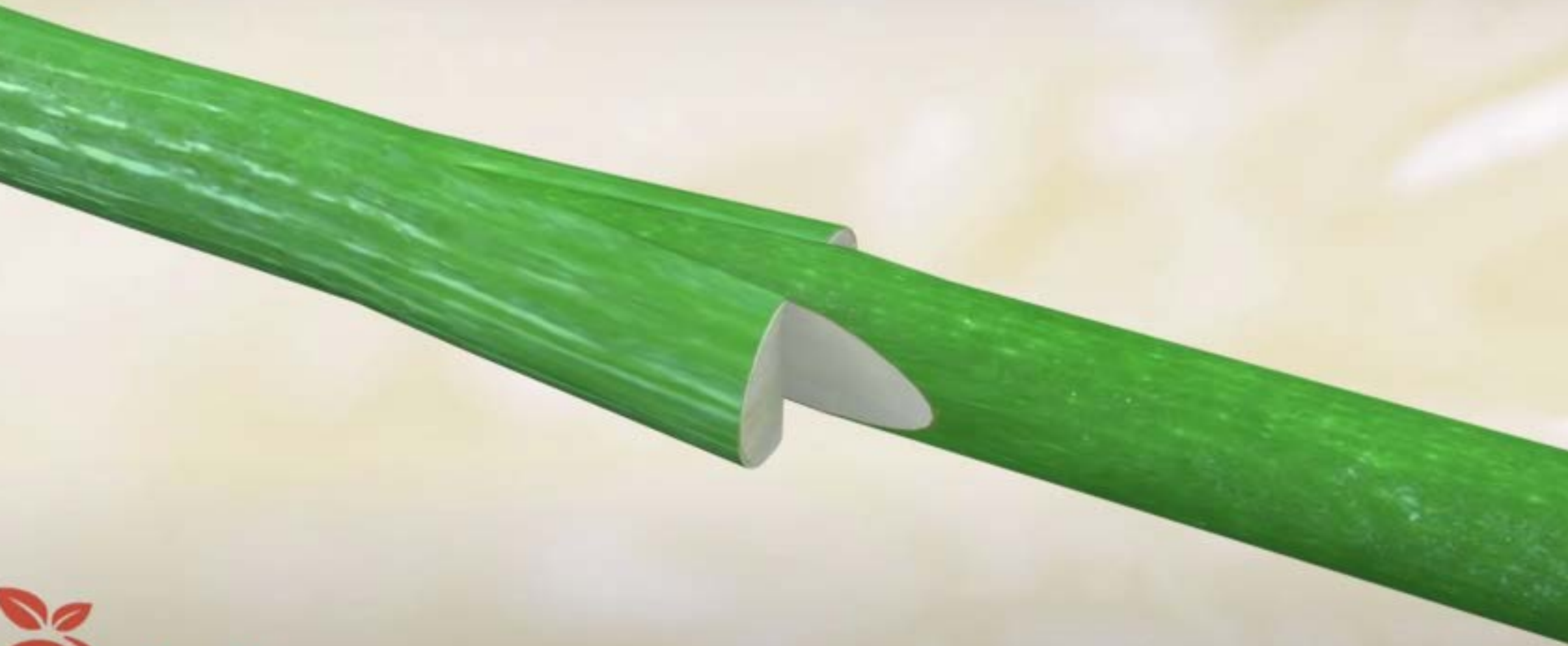


# Concept of Grafting (continued)

- ▶ Cleft grafting
  - ▶ Can be done any time of the year
  - ▶ Requires some skill and simple tools
  - ▶ Somewhat more difficult than “T” or cleft graft to some
  - ▶ Overcomes apical dominance
  - ▶ By using scion wood with 3 to 4 buds increases the chance of success



 YouTube







Roll over image to zoom in





by **Everbilt**

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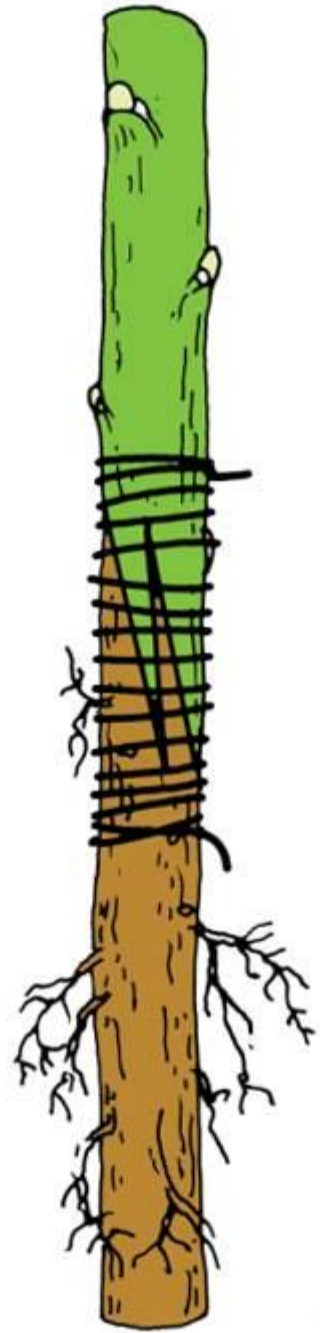
Product Images



# Other grafting methods

- ▶ Whip Graft and Tongue (English cut)
  - ▶ Can be dangerous, more so than any other of the grafting techniques
  - ▶ Cutting the tongue is not for the faint of heart
  - ▶ Very difficult to do, especially for the first few times
  - ▶ Requires no special tools or accessories
  - ▶ Overcomes apical dominance
  - ▶ High chance of success, as using 3 to 4 buds





# Other grafting methods

- ▶ “Z” Graft (Approach graft)
  - ▶ Very difficult to do, especially for the first few times
  - ▶ Requires no special tools or accessories
  - ▶ Can be dangerous
  - ▶ Overcomes apical dominance
  - ▶ High chance of success, as using 3 to 4 buds
  - ▶ Scion wood can be larger than rootstock



# Grafting Citrus with the Z Grafting Technique



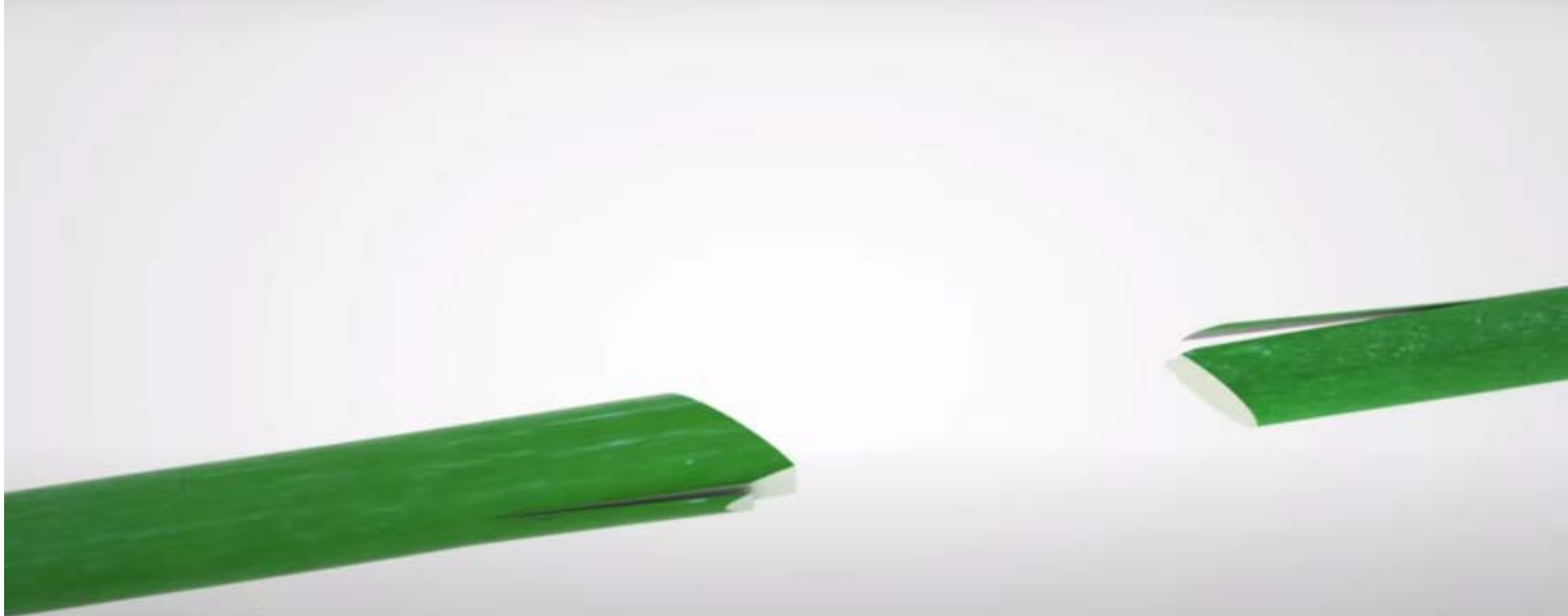
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# Grafting Citrus with the Z Grafting Technique



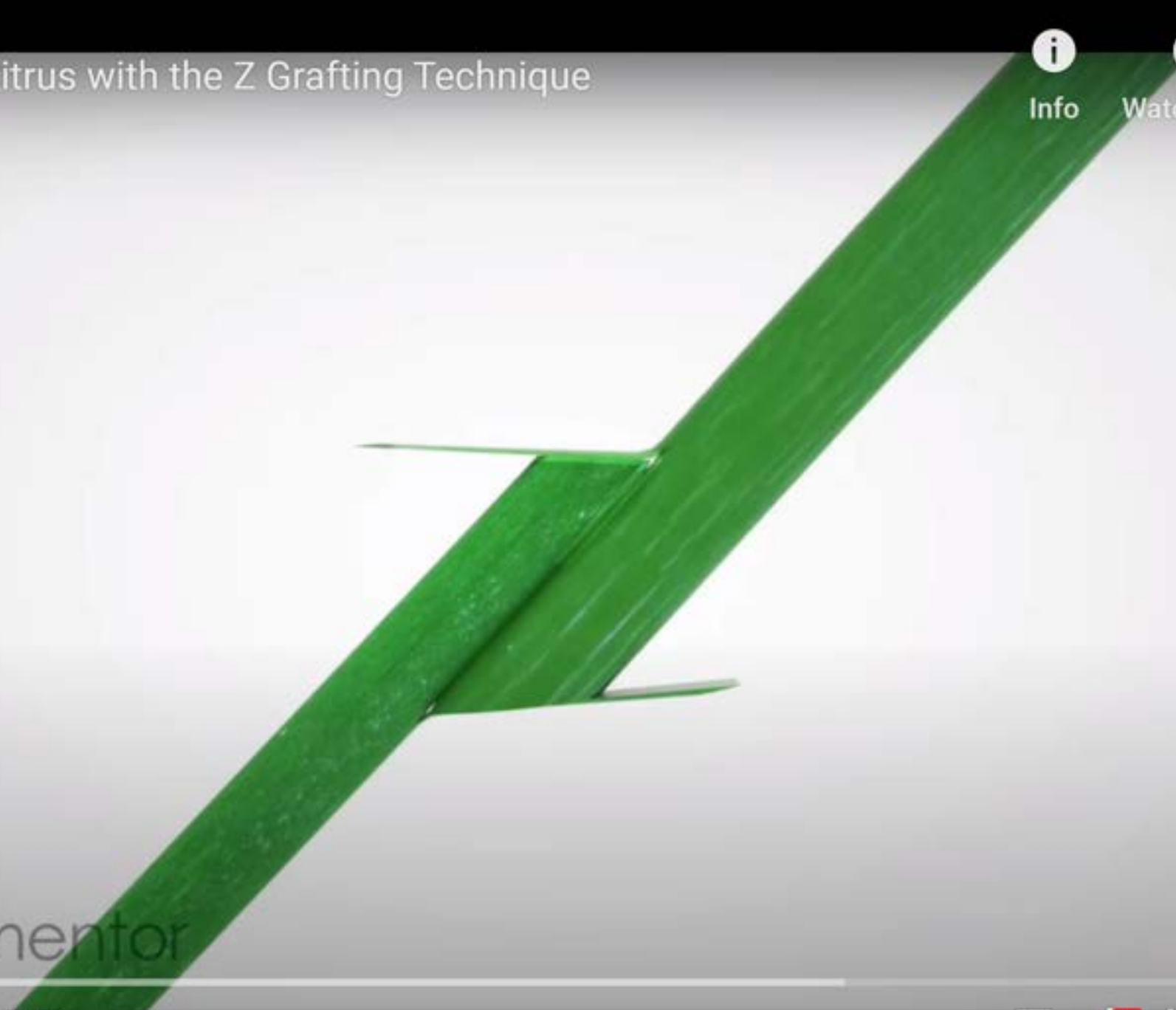
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# Grafting Citrus with the Z Grafting Technique



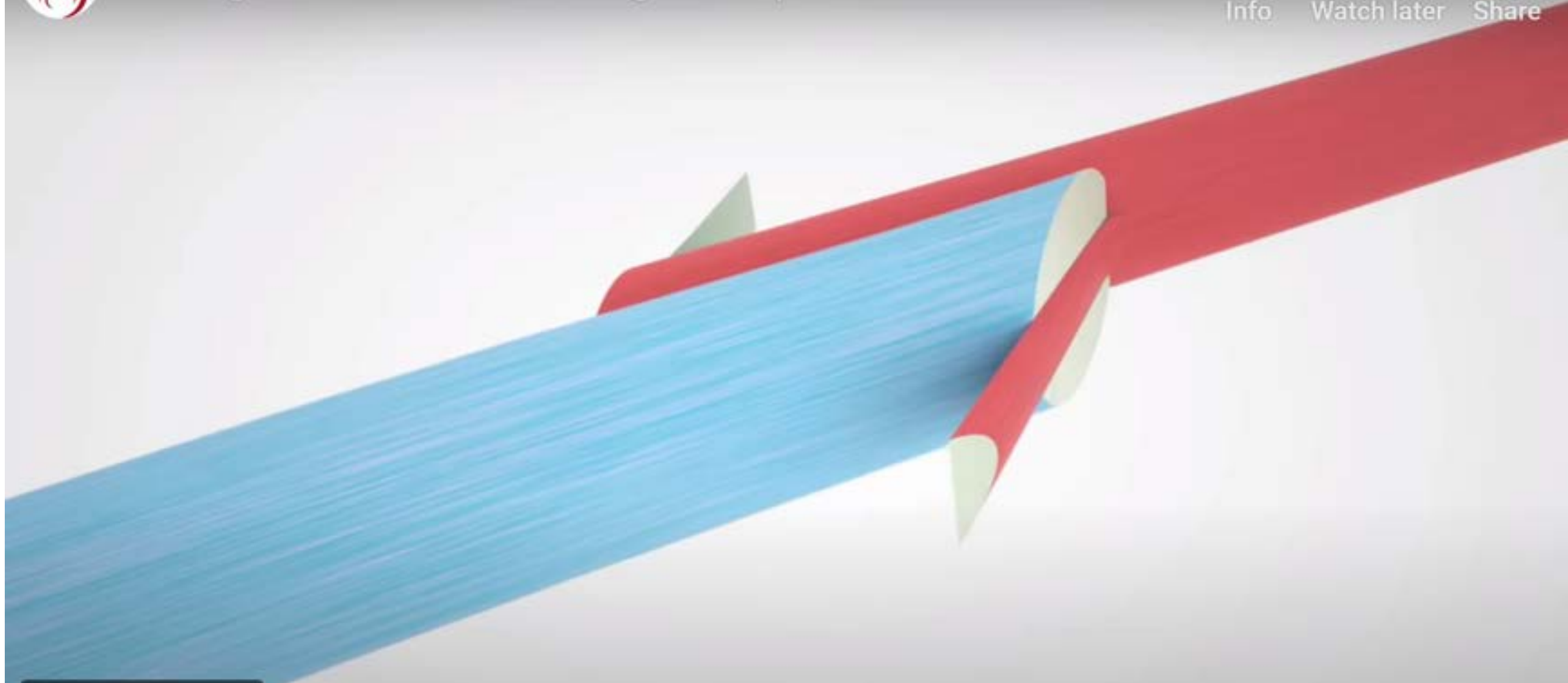
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# Care of Graft

- ▶ Labeling
  - ▶ Temporary masking tape
  - ▶ Aluminum tags
  - ▶ Aluminum or Stainless Steel ½” Dymo roll
- ▶ Sun exposure for a newly grafted plant
  - ▶ Aluminum soil wrapped
- ▶ Watering
- ▶ Fertilizing
  - ▶ Organic
  - ▶ Light quantities
- ▶ Best time to graft



# Care of Grafted Trees (continued)

## ▶ Garden Pests

- ▶ HLB, huanglongbing, also known as citrus greening; Asian citrus psyllid; citrus canker; citrus black spot; and sweet orange scab.
  - ▶ No known cure
- ▶ Scale and other pest
  - ▶ Hard spray with a hose regularly
  - ▶ Best spray mixture
    - ▶ Cooking oil
    - ▶ Dishwashing soap, not detergent
    - ▶ Baking powder
    - ▶ Hot pepper liquid (personal defense spray)
  - ▶ Spray mixture every four days to get the new hatch





# Care of Grafted Trees (continued)

## ▶ Garden Pests

## ▶ Ants

- ▶ Produce more organic material in soil than worms
- ▶ The total mass of ants exceeds the combined mass of all mammals other than humans and birds combined
- ▶ Teaching a pig to dance
- ▶ Feed on sugar secretions
- ▶ Herd scale and other bugs
- ▶ Fight off bug predators
- ▶ Control
  - ▶ Tanglefoot, or Catchmaster
    - ▶ Wrap the tree with caution tape
    - ▶ If bark is rough, use latex tube caulking beneath the tape
    - ▶ Apply Tanglefoot on tape and reapply irregularly as it dries out



VIDEO



Roll over image to zoom in

