

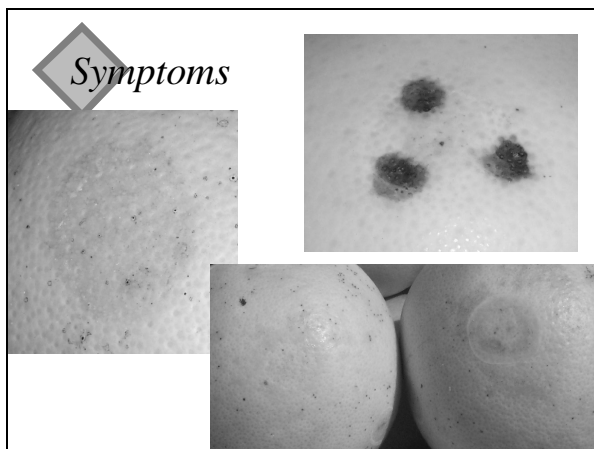
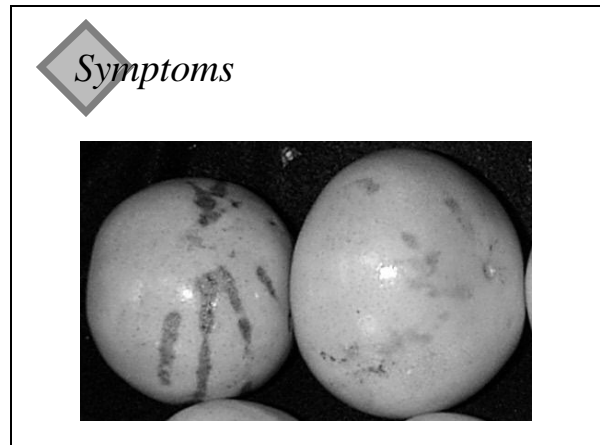
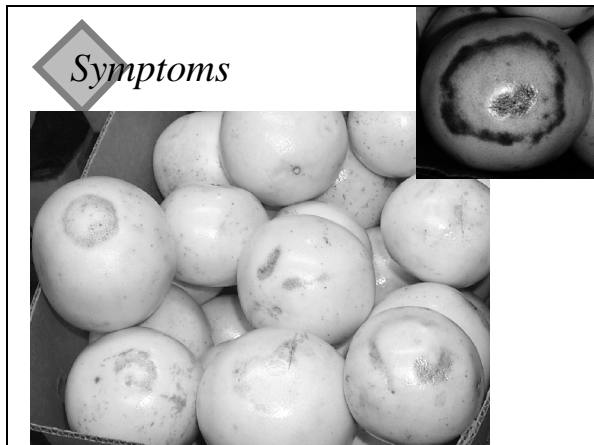
# Green Ring”

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# What is Green Ring (GR)?



*Green Ring Info. To Date*

- ≈ Became a significant problem Fall 1998.
- ≈ Primarily found on drenched, east-coast citrus.
- ≈ Cultivars Affected:
  - ‘Fallglo’ & ‘Sunburst’ tangerines
  - ‘Navel’ & ‘Hamlin’ oranges
  - Red & White grapefruit
  - Lemons?

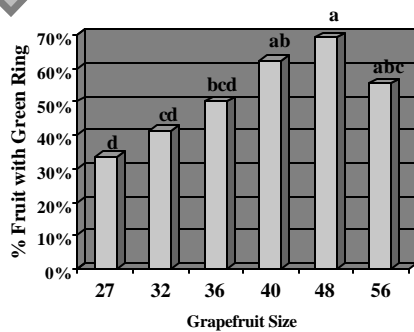
### Green Ring Info. To Date

- ≈ GR symptoms usually develop between the drench and packing.
- ≈ Most drenched fruit did not develop GR.
- ≈ Reports of GR occurred between early Oct. and late Nov.
  - Developmental factors likely involved.

### Green Ring Info. To Date

- ≈ GR developed on fruit from a variety of drenchers (both truck and bin).
- ≈ GR fruit have not yet been reported on Imazalil-drenched fruit.
  - Fewer loads were drenched with Imazalil than with TBZ; Possibly none were GR susceptible.
- ≈ Drying fruit before degreening reported to reduce incidence of GR.

### GR Susceptibility vs. Size



### Postharvest Tests

- ≈ Fruit from susceptible blocks tested.
- ≈ Drenched with one of seven different solutions.
- ≈ Degreened for 48 or 72 hrs. (5 ppm ethylene, 85 °F, 92% RH).
- ≈ Washed, waxed (unless stated) and stored at 70 °F.

### Postharvest Tests

Treatments	% Fruit with "Green Ring"		
	Overall	Waxed	Un-waxed
Control (water)	0.0 b	0.0	0.0
+Chlorine (125 ppm)	0.0 b	0.0	0.0
+TBZ +Surfactant +BF* +oil	27.0 ab	2.0	41.3
+TBZ +Surfactant	29.3 ab	18.5	47.3
+TBZ +Chlorine +Surfactant	38.8 a	8.7	50.0
+Chlorine +Surfactant +BF* +Oil	50.8 a	23.9	75.0
Commercial Drench	49.9 a	50.0	80.0

\*BF = Break Fluid

### Pre-harvest Factors Affecting Green Ring

- ≈ Very little know. Could include any of a number of chemicals and/or weather-related events including:
  - Preharvest chemicals, excessive rain and/or poor drainage, a large proportion of "off bloom" fruit, or warm, dry winter and fall weather.
- ≈ Reports surfaced in Dec. suggesting that preharvest sulfur sprays may play a role.

## *Pre-harvest Factors Affecting Green Ring*

- ≈ A test was conducted in January spraying whole Star Ruby grapefruit trees with either:
  - water (control)
  - sulfur (15 lb/acre)
  - benlate (2 lb/acre)
  - sulfur + benlate
- ≈ Fruit were harvested 7 d later, drenched, degreened for ~52 hours (5 ppm ethylene at 85 °F, 95% RH) and stored at 70 °F.
- ≈ No GR developed in any of the treatments.

## *Summary*

- ≈ GR symptoms could be reproduced on susceptible fruit using combinations of different drench chemicals.
- ≈ Smaller fruit are more susceptible.
- ≈ Preharvest factors have not yet been identified.

## *Steps to Reduce GR?*

- ≈ If GR susceptible fruit are discovered, stop drenching.
  - Take other precautions for decay control.
- ≈ Dry drench solution on fruit surface before degreening.
- ≈ Maintain degreening room between 90-95% RH.

*Thank You!*