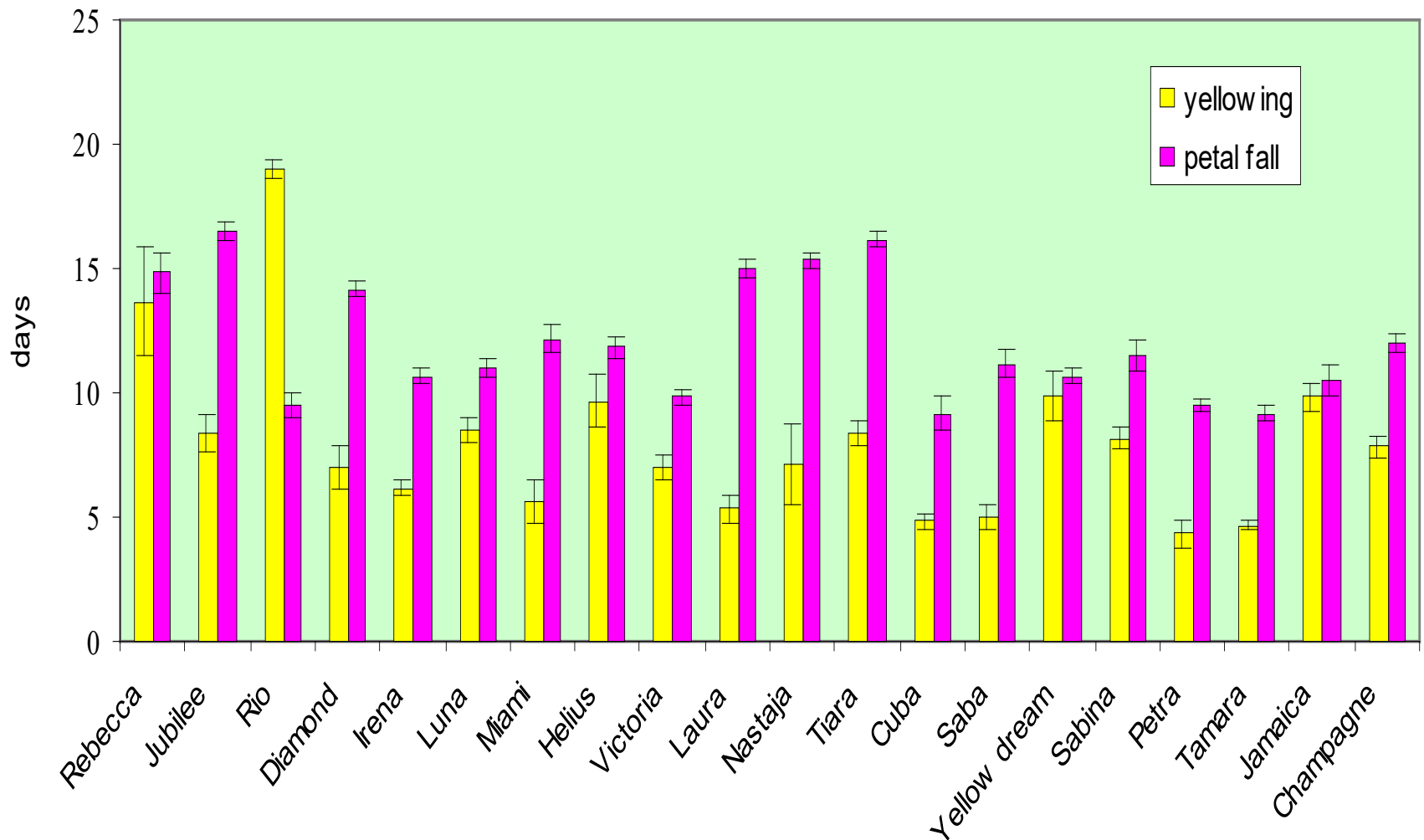




Factors affecting the postharvest life of cut flowers

Select better cultivars



Select better cultivars



Variety

Control
days

Ethylene
days

% change

Amber	11.8	8.7	-27%
Big Fun	6.4	4.1	-36%
Bloody Mary	13.3	10.8	-19%
Brooke	7.2	5.9	-18%
Carrousel	15.6	13.6	-13%
Charlotte	10	7.2	-28%
Clear Ocean	12.5	10.3	-18%
Engagement	9	7.4	-18%
Erin	17.7	9.3	-47%
French Vanilla	8.5	6.4	-25%
Jade	14.6	11.7	-20%
Lina	4.5	3.6	-20%
Lindsey	4.5	3.7	-18%
N-Joy	7.2	4.1	-43%
Osiana	8	1.8	-78%
Peach Sherbert	9.6	5.7	-41%
Pekcoubo	9.9	8	-19%
Rubor	5	2.4	-52%
Verdi	18.8	14.4	-23%



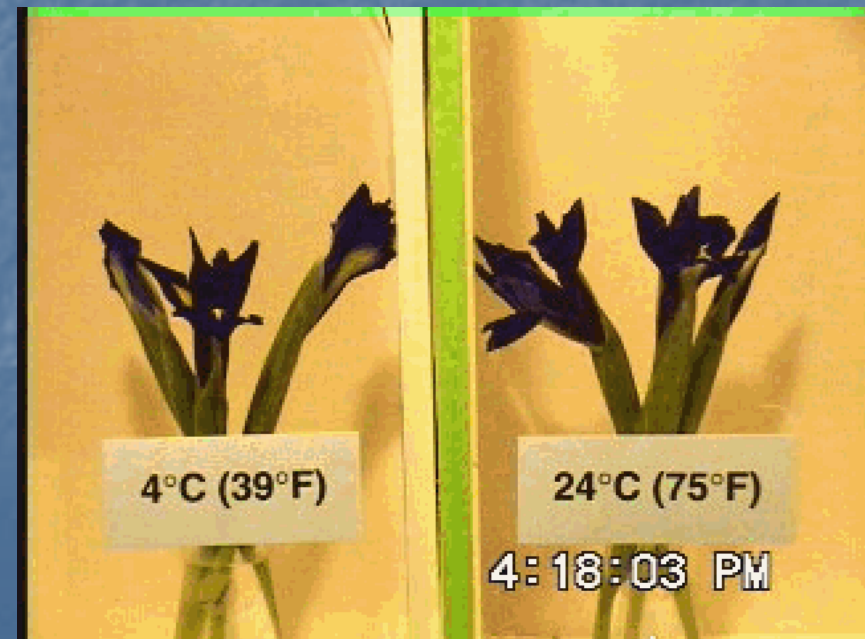
No Ethylene

Ethylene

MacNish, Leonard, and Nell, 2006

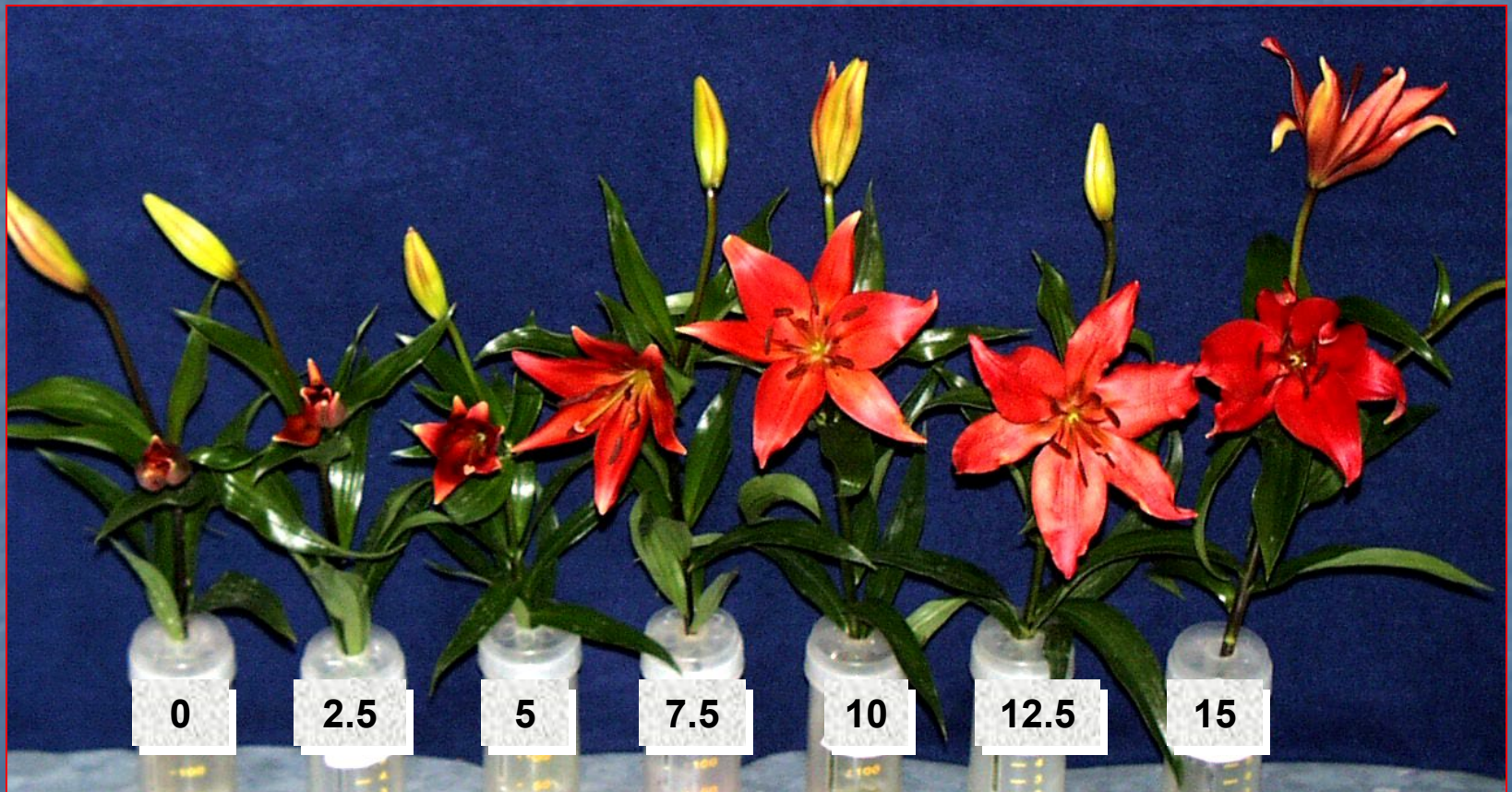
Factors affecting the life of cut flowers

- Temperature
- Temperature
- Temperature

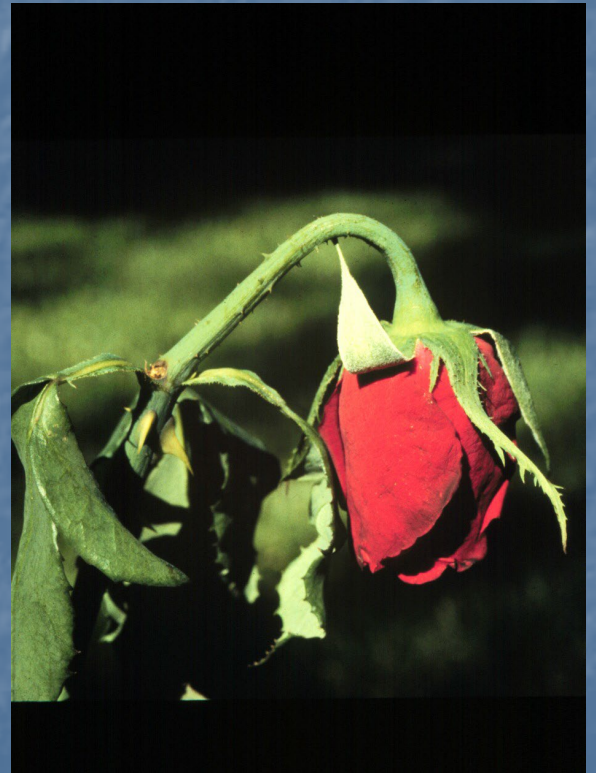


Effect of temperature

Lilies stored 5 days, 2 days in vase life room

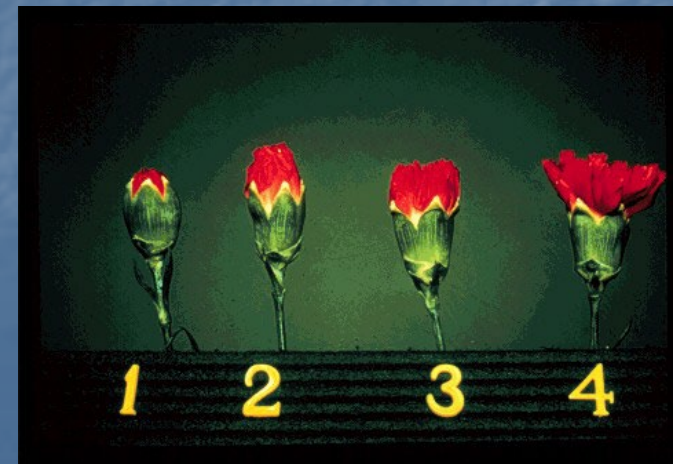


Other factors affecting the life of ornamentals

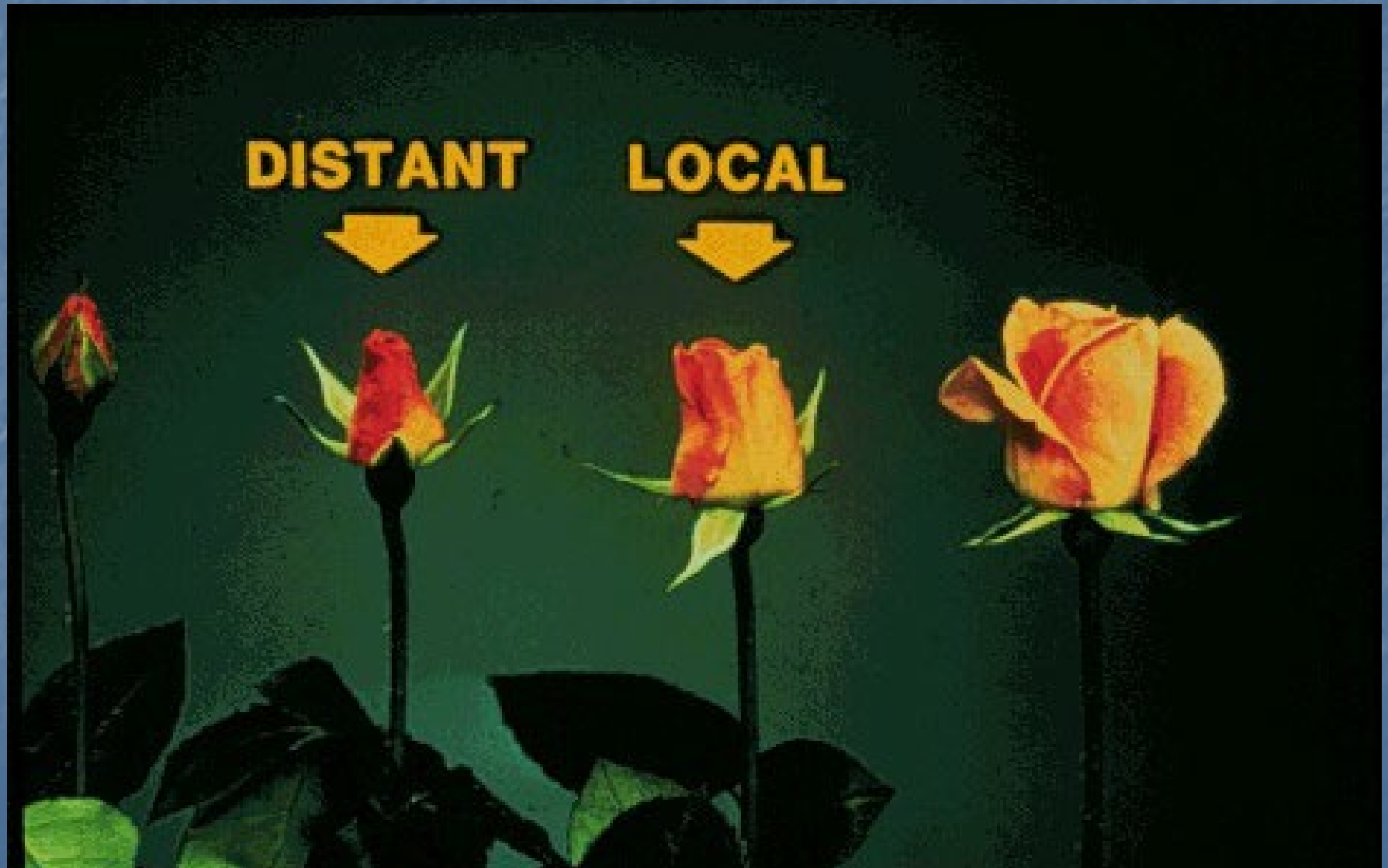


Maturity

- Easily determined
 - Visual characteristics
- Advantages of bud harvest
 - Shorter production time
 - Less transportation damage
 - Easier temperature control



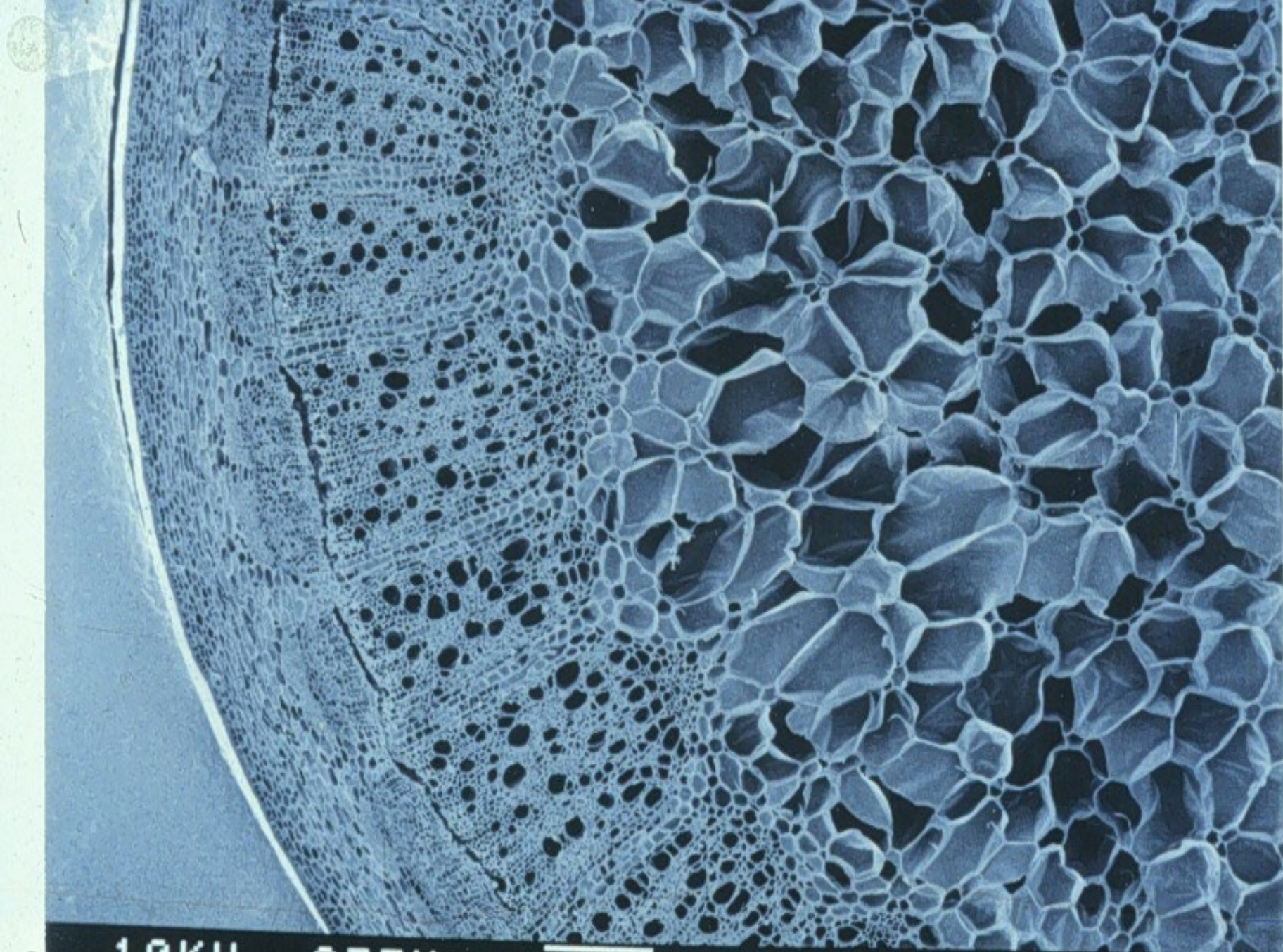
Maturity



Water relations

- Failure in water relations
- Water uptake < transpiration
- Xylem occlusion
 - Emboli
 - Hard water
 - Bacteria
 - Physiological plugs





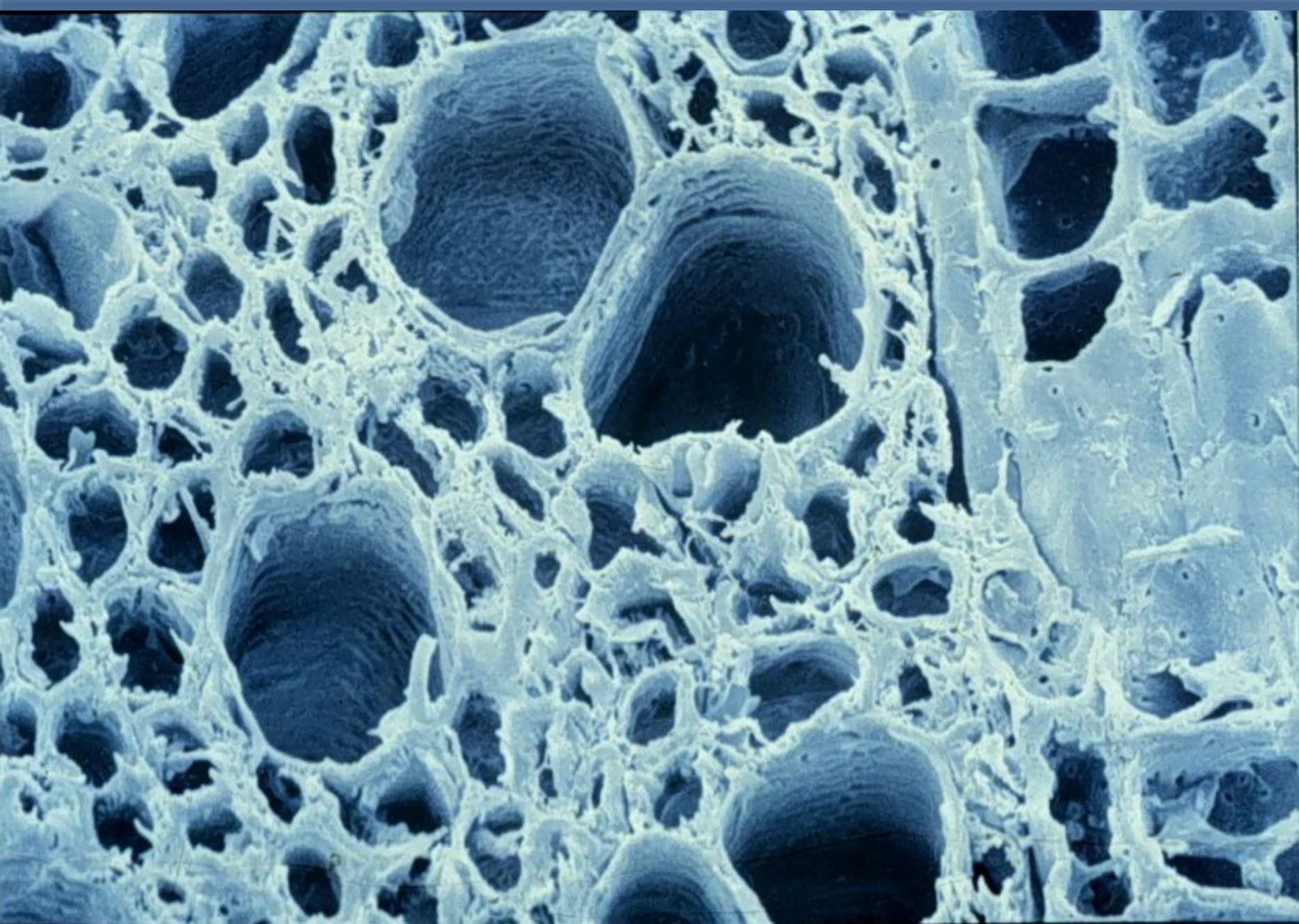
10KV

035X

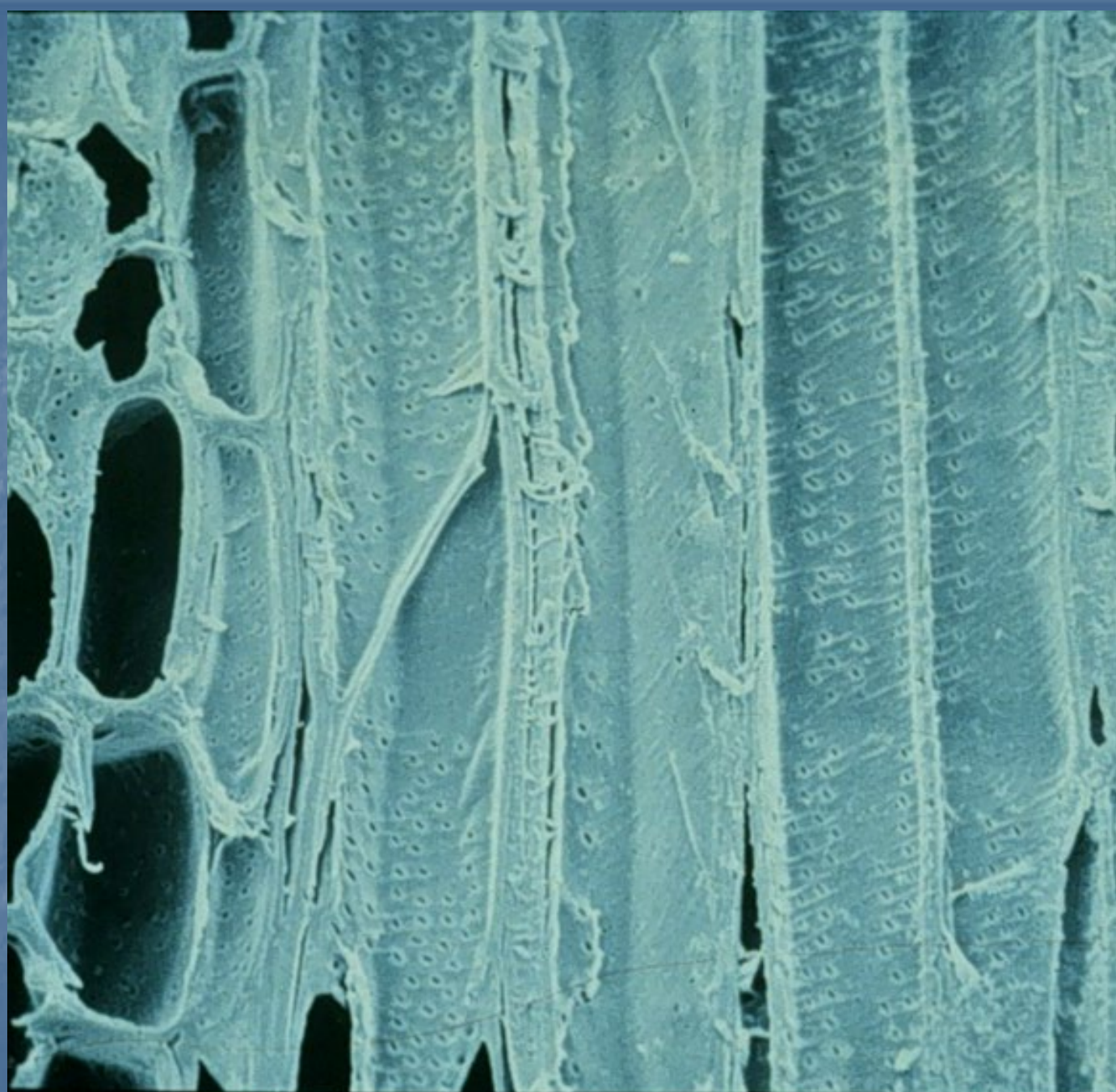
286P

0008

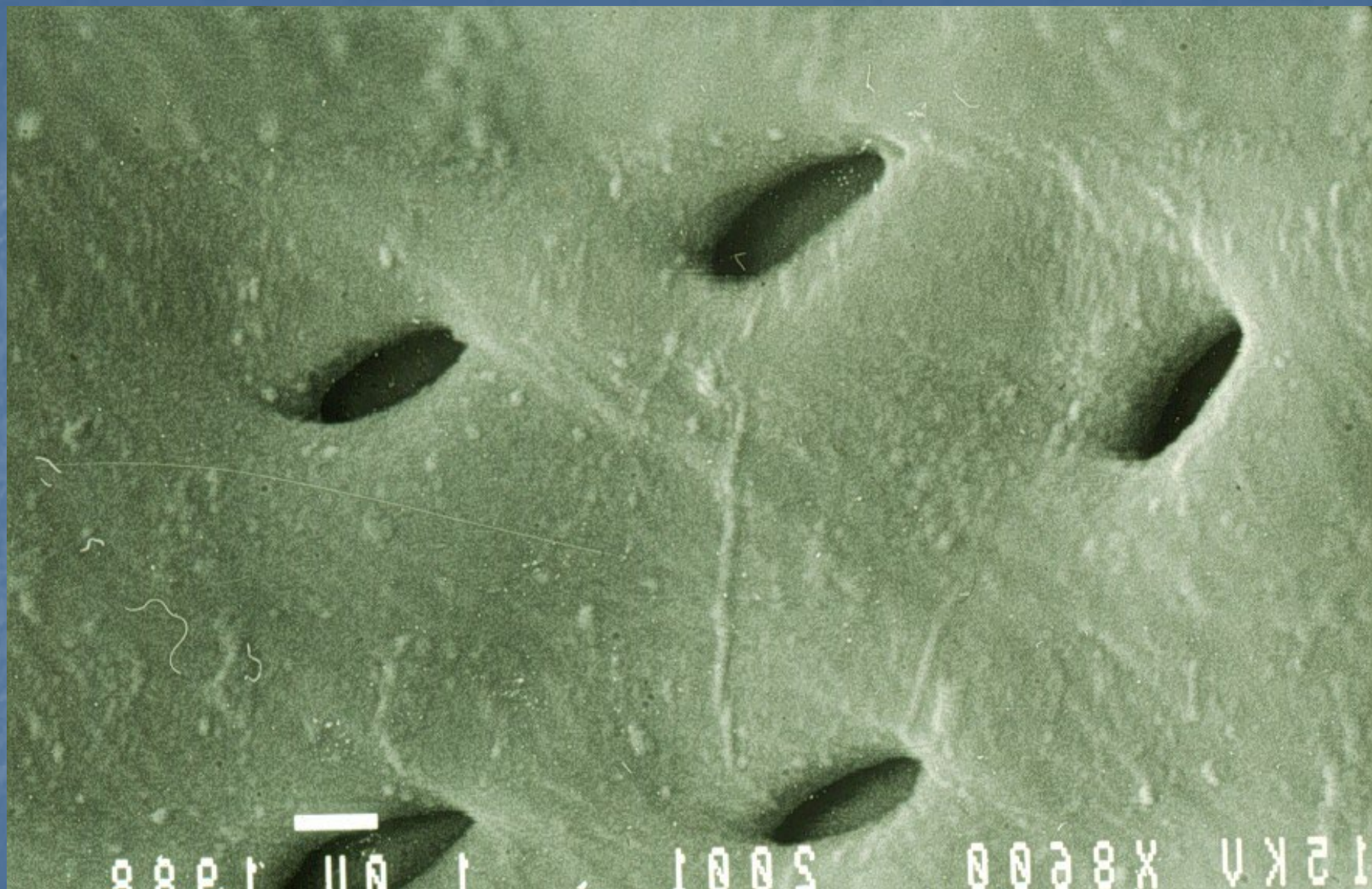
SONIA



10KV 641X 15.6P 0059



4X 30.9V 0048 CARA MIA



Air emboli

- **Recut under water**
- **Acidify the water**
- **Use warm (or cold) water**
- **Pressurize (20 cm H₂O)**
- **Use a brief detergent dip**



Air Embolisms

Water depth

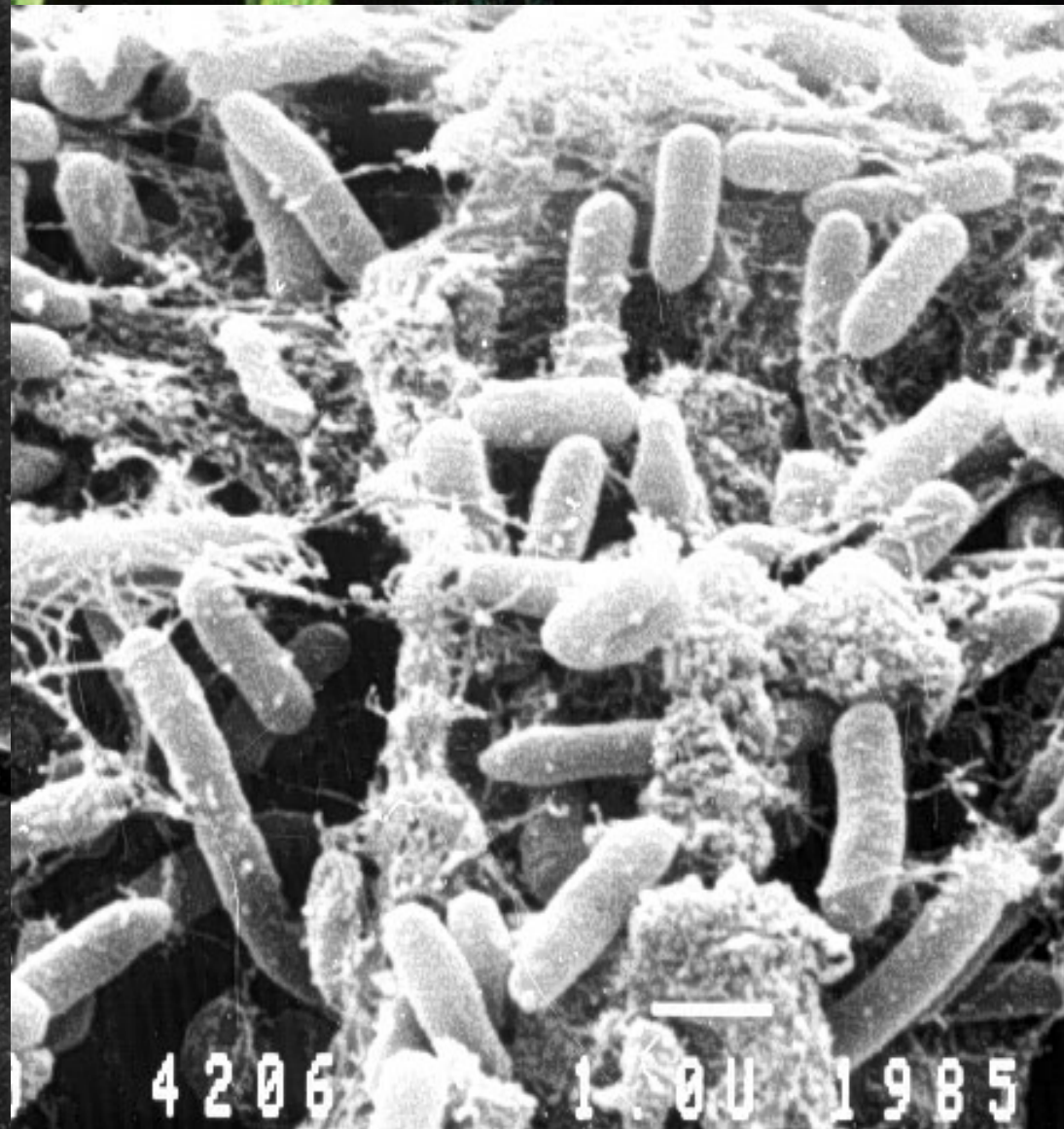
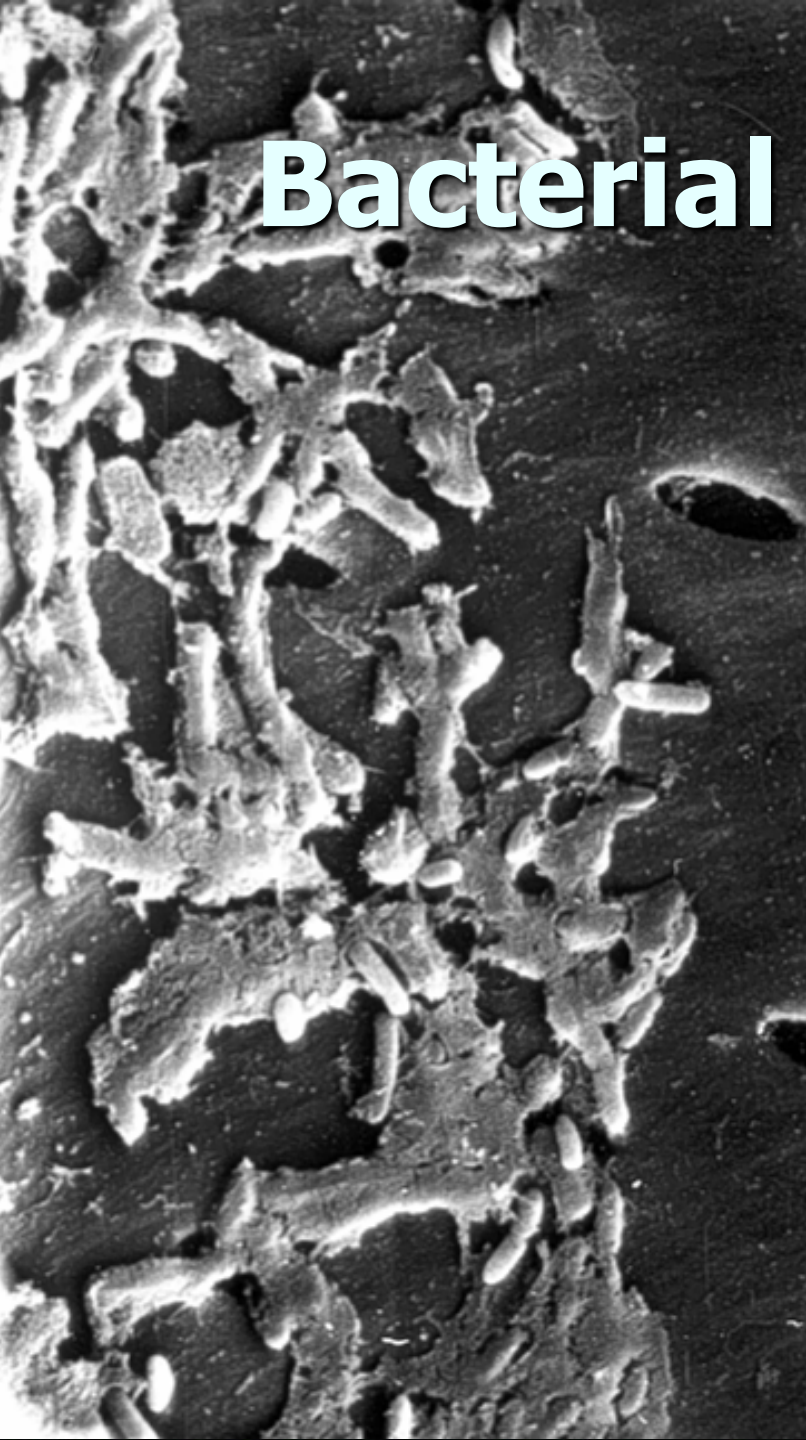
- Roses dehydrated 10%
- Recut
- Placed in different water depths
- Photograph taken after 4 hours



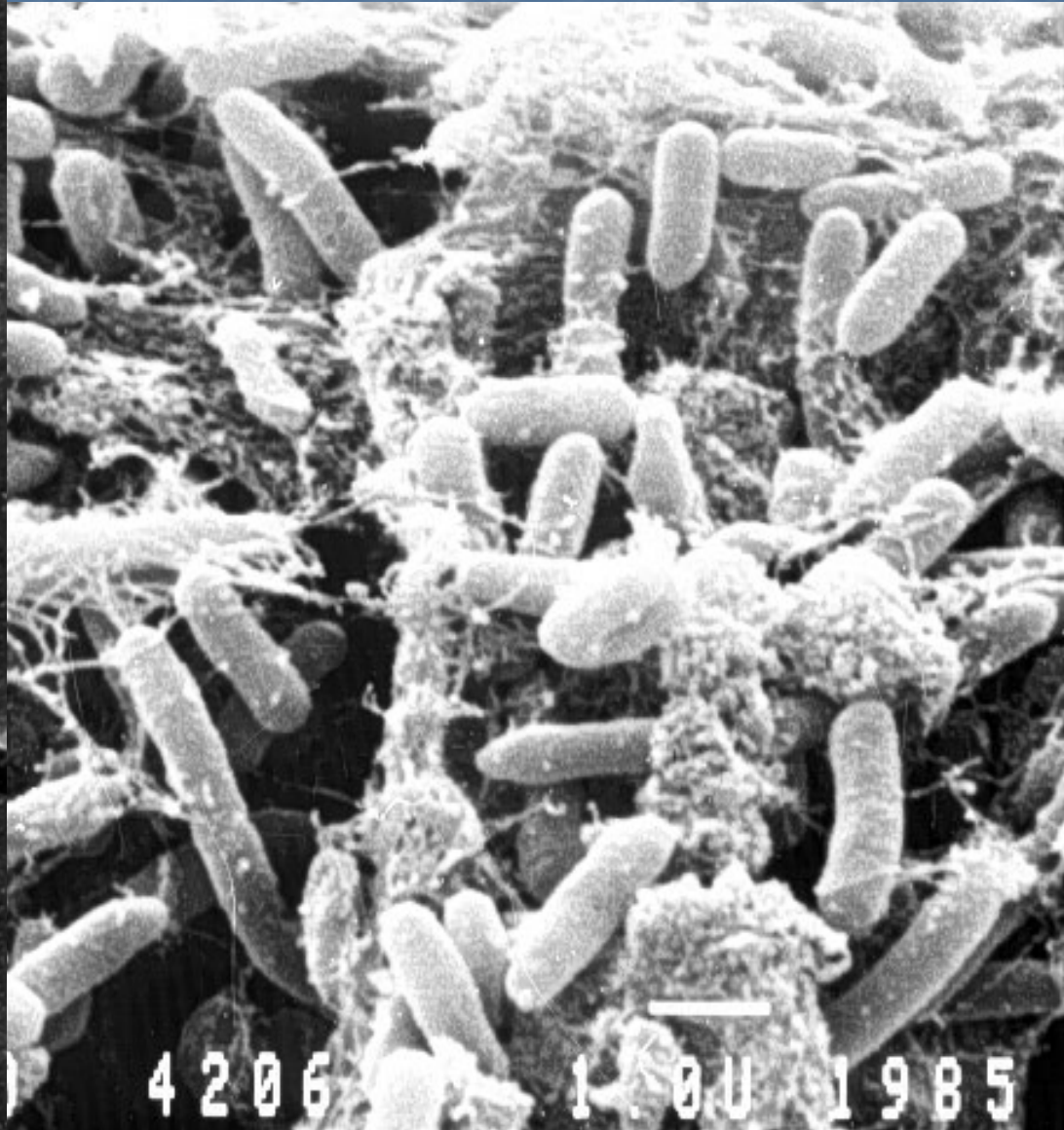
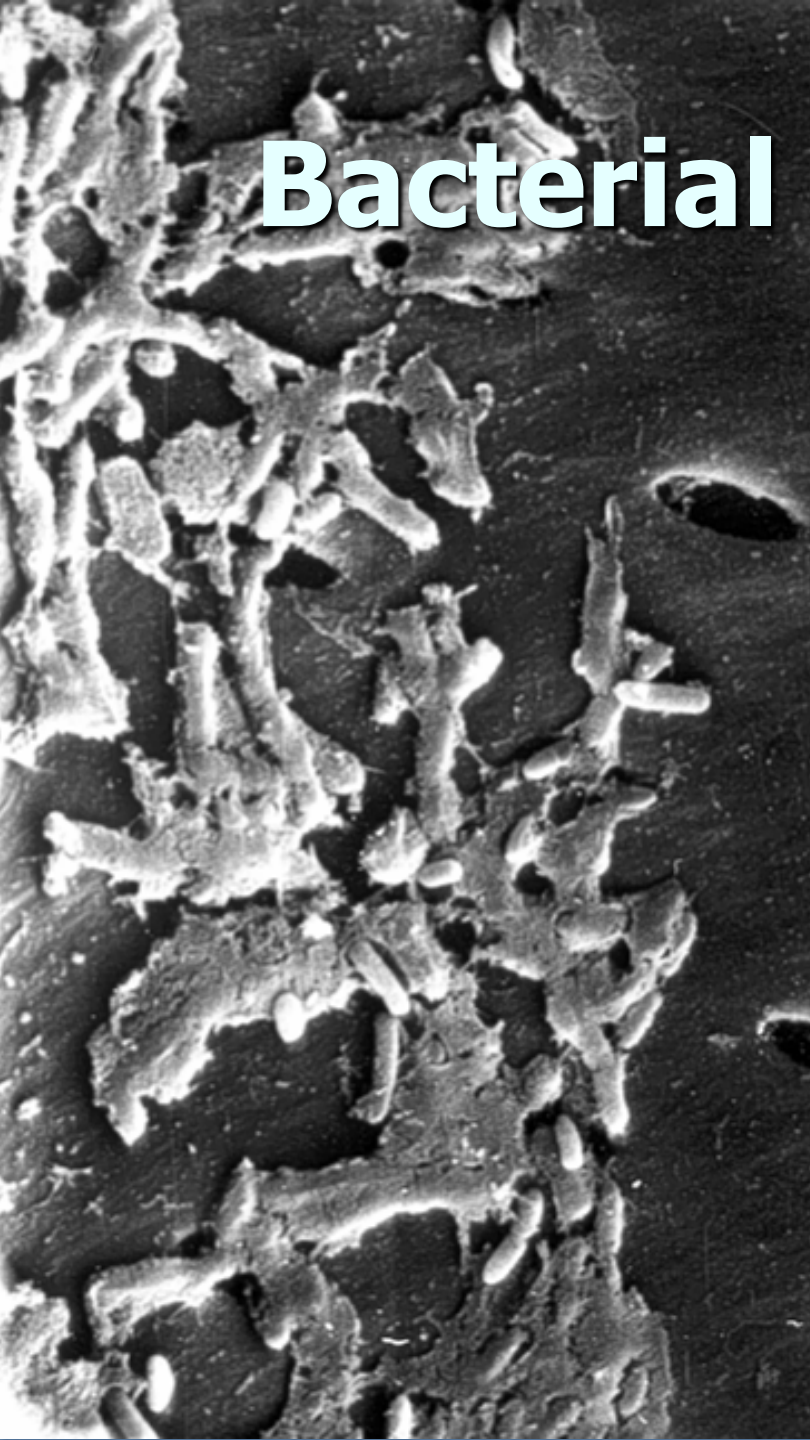
Bacterial contamination

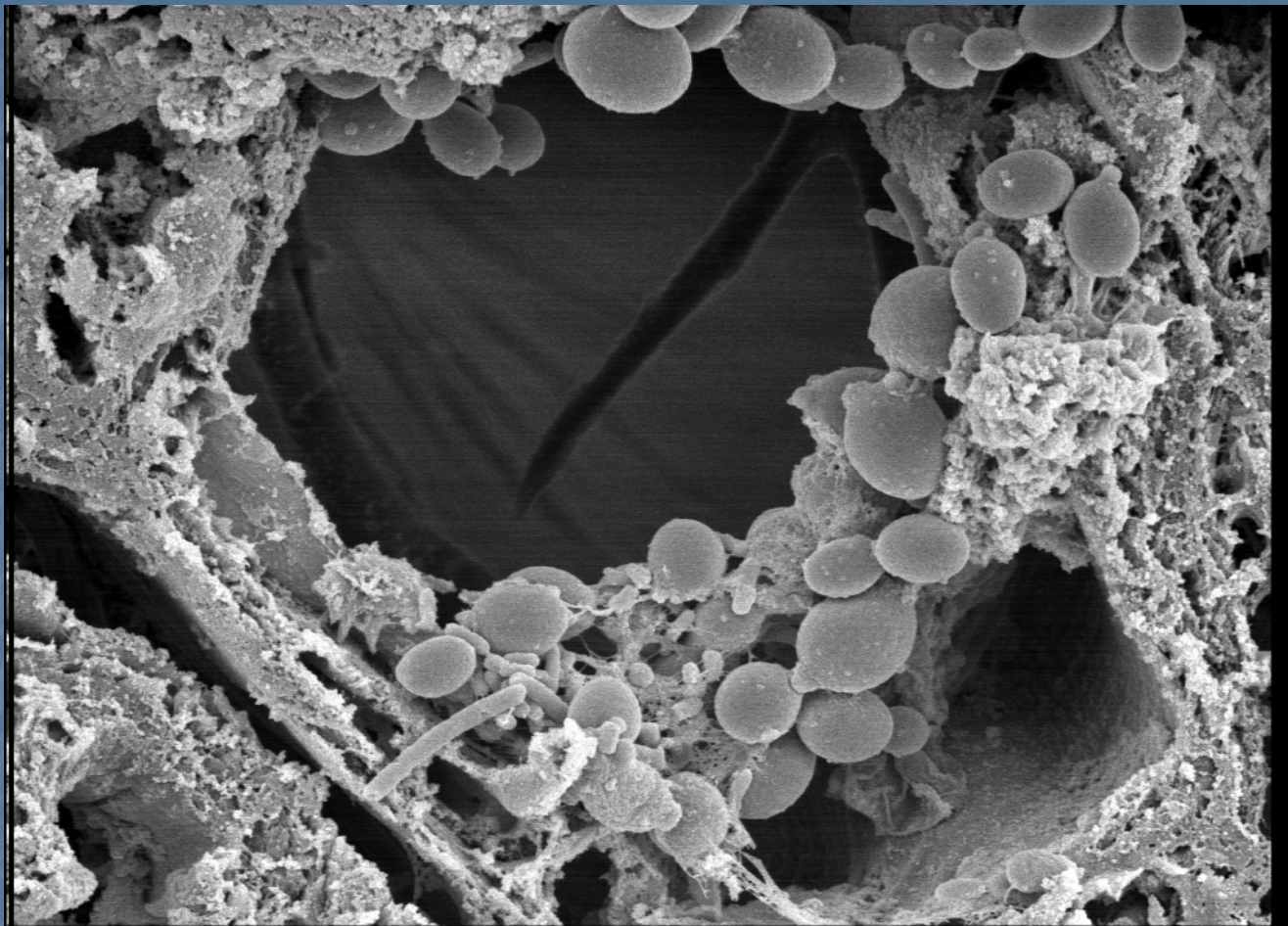


Bacterial contamination

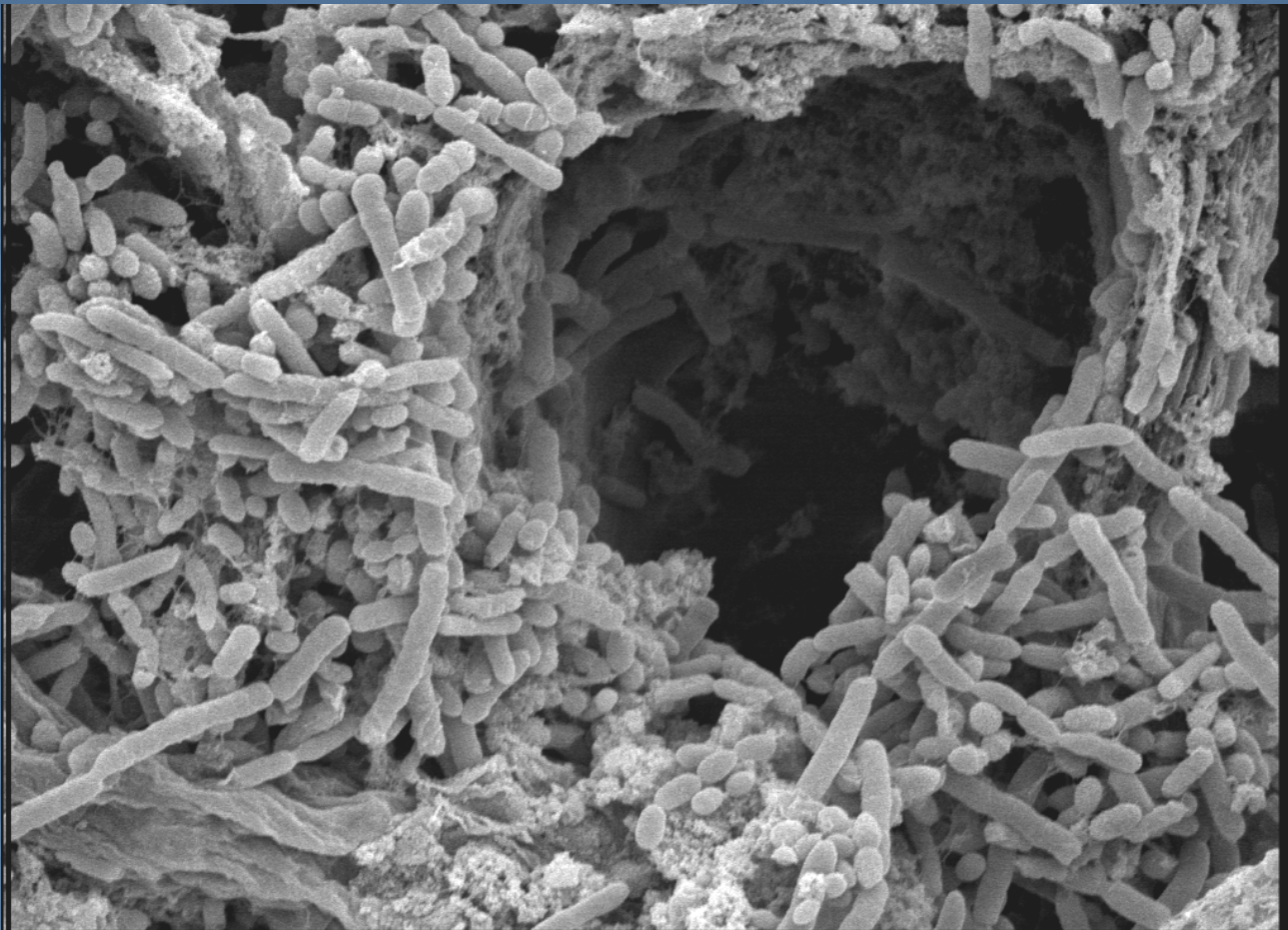


Bacterial contamination





009047 6.0 kV X3.00K 10.0µm



009034 6.0 kV X4.50K 6.67um

Maintaining water supply

- Use a preservative
- Clean *white* buckets



Maintaining water supply



The simple
question:
***Would you
drink *that*
water, from
that bucket?***

How clean are your buckets?



How clean are your buckets?

Number of bacteria per ml
found in Gainesville, FL retail
hydration solution

Retailer	Bacteria
1	150
2	6,750,000
3	3,000,000
4	7,750,000
5	850,000,000
6	5,500,000
7	6,200,000
8	675,000

The bacteria in solutions are in plague proportions!

How clean are your buckets?

Vase life (days) of species held in clean (0 bacteria) or dirty (100,000,000 bacteria per ml) water at 70°F.

Species	Clean water	Dirty water
Chrysanthemum	15.1 \pm 0.3	9.6 \pm 1.7
Rose	9.9 \pm 0.9	4.3 \pm 0.6
Snapdragon	10.9 \pm 1.2	7.4 \pm 0.5
Stock	9.1 \pm 0.6	5.7 \pm 0.7

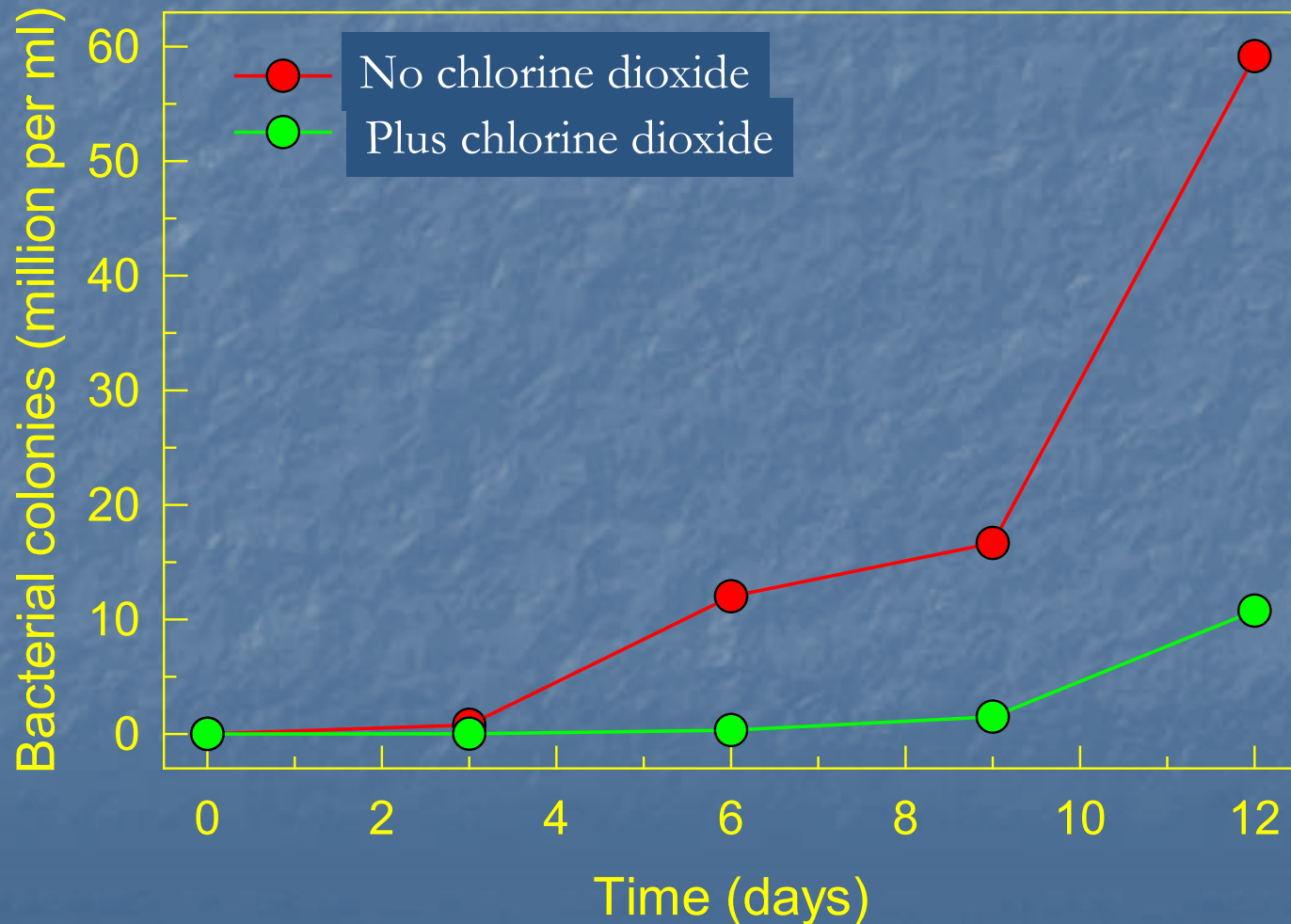
New developments in hygiene

Chlorine dioxide

- Liquid
- Chlorine-based
- Active at very low concentration
- Relatively stable
- Not toxic to flowers

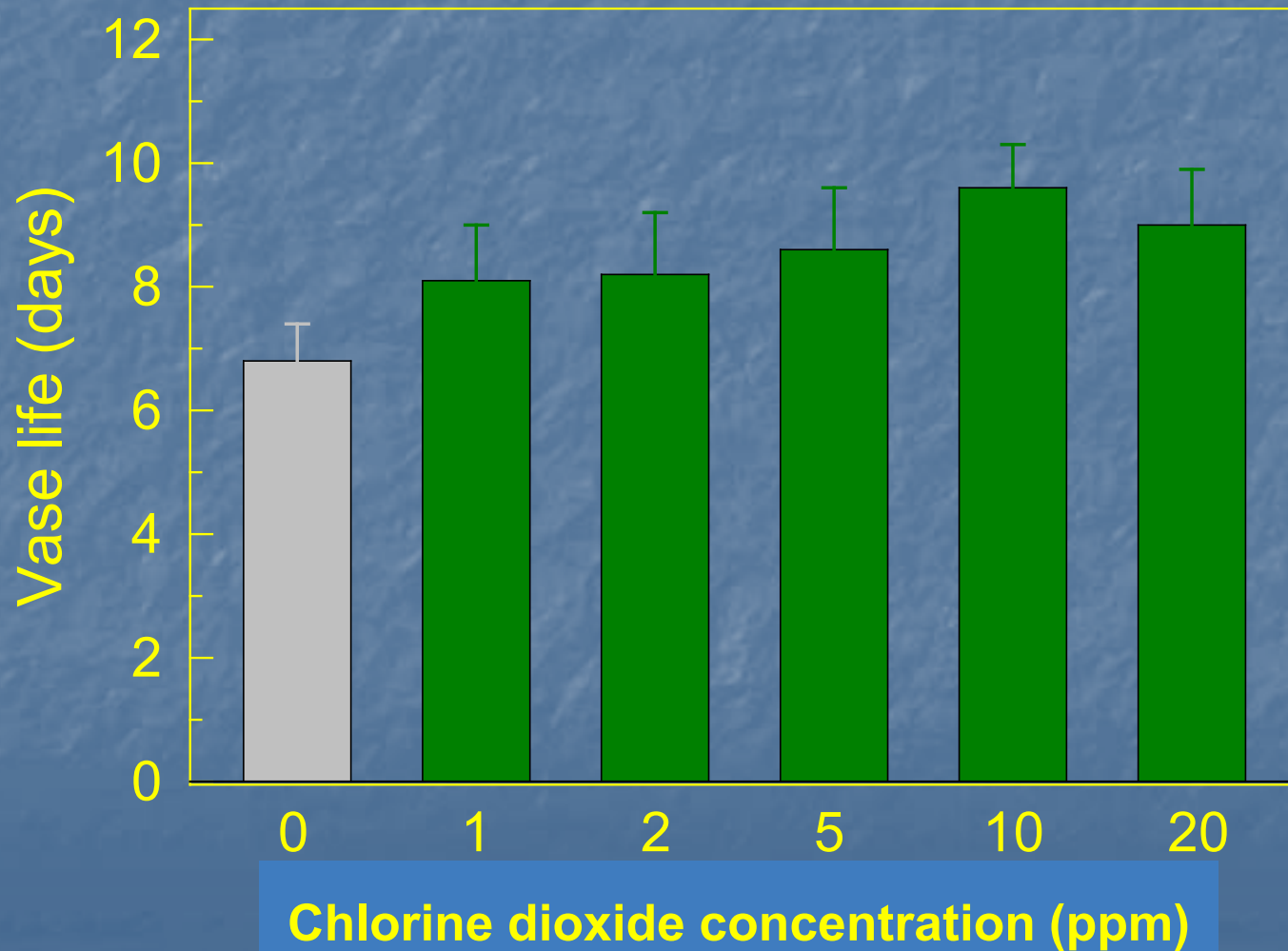
Chlorine dioxide effects

1. Reduces bacteria build-up in vase solutions



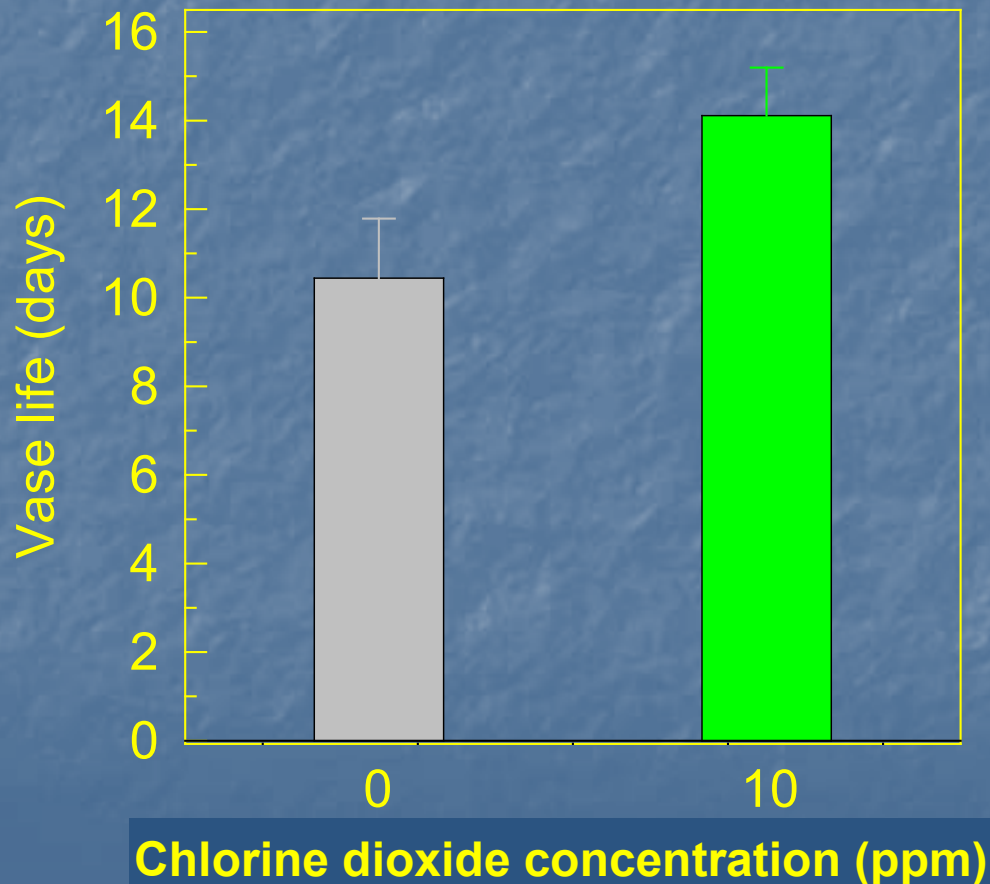
Chlorine dioxide effects

2. Extends stock flower longevity

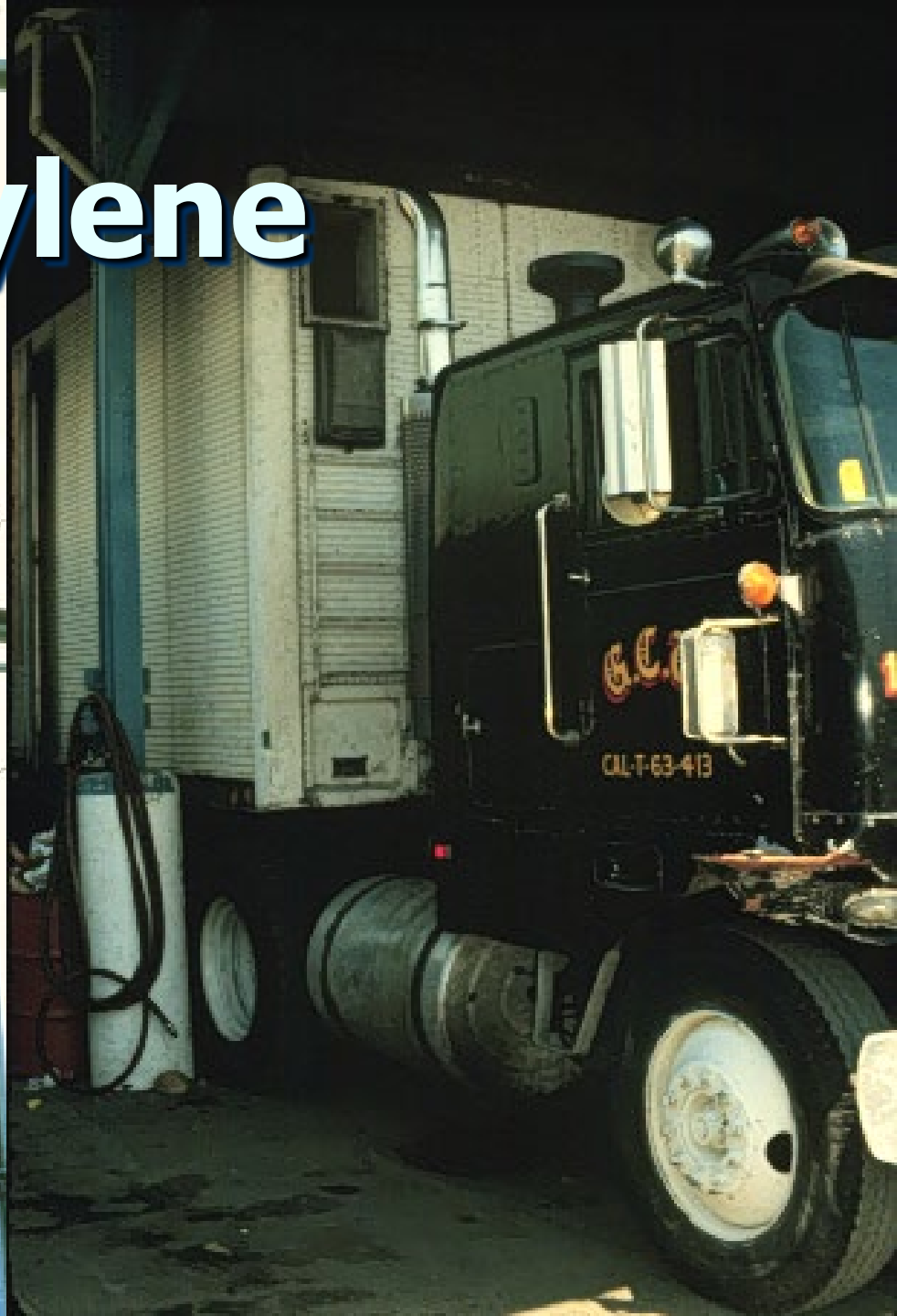


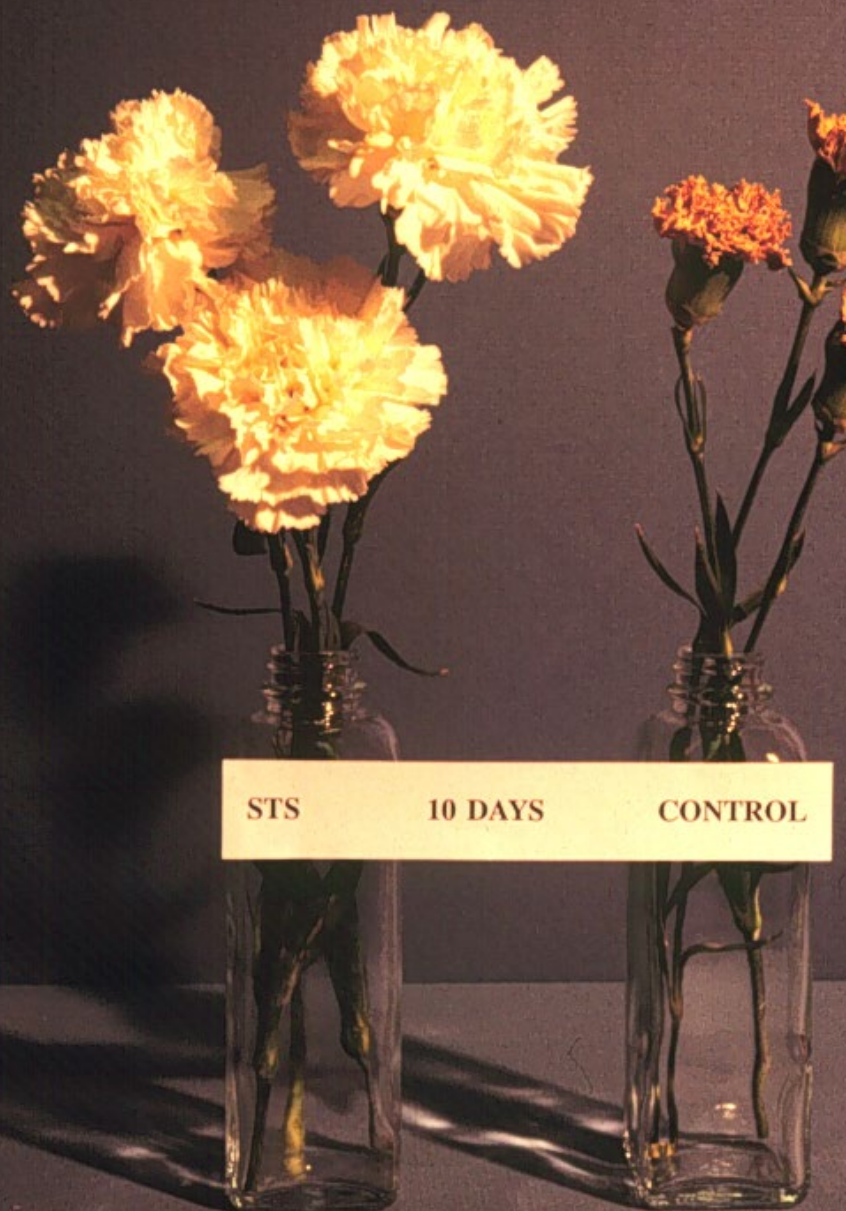
Chlorine dioxide effects

2. Extends *Gerbera* flower longevity



Ethylene







Benefits of 1-MCP



Benefits of 1-MCP

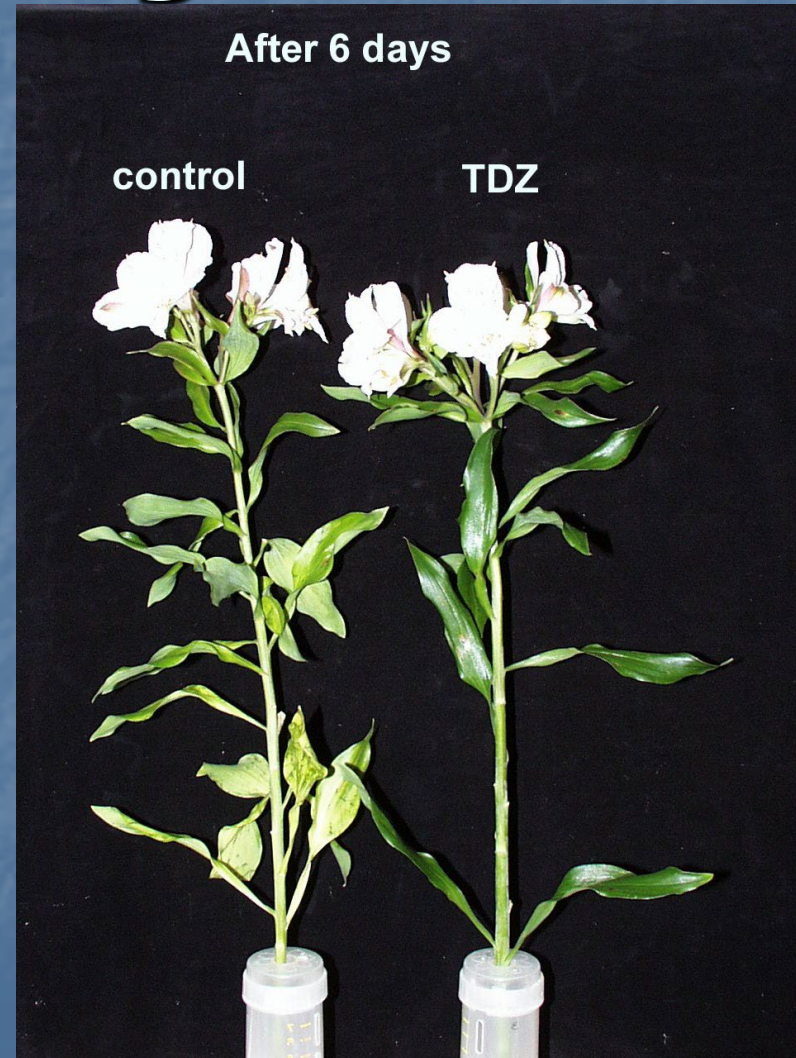


Benefits of 1-MCP



Other growth regulators

- Gibberellins retard leaf yellowing
- So do cytokinins
- Including TDZ (thidiazuron), a non-metabolized cytokinin





And it works on potted plants!

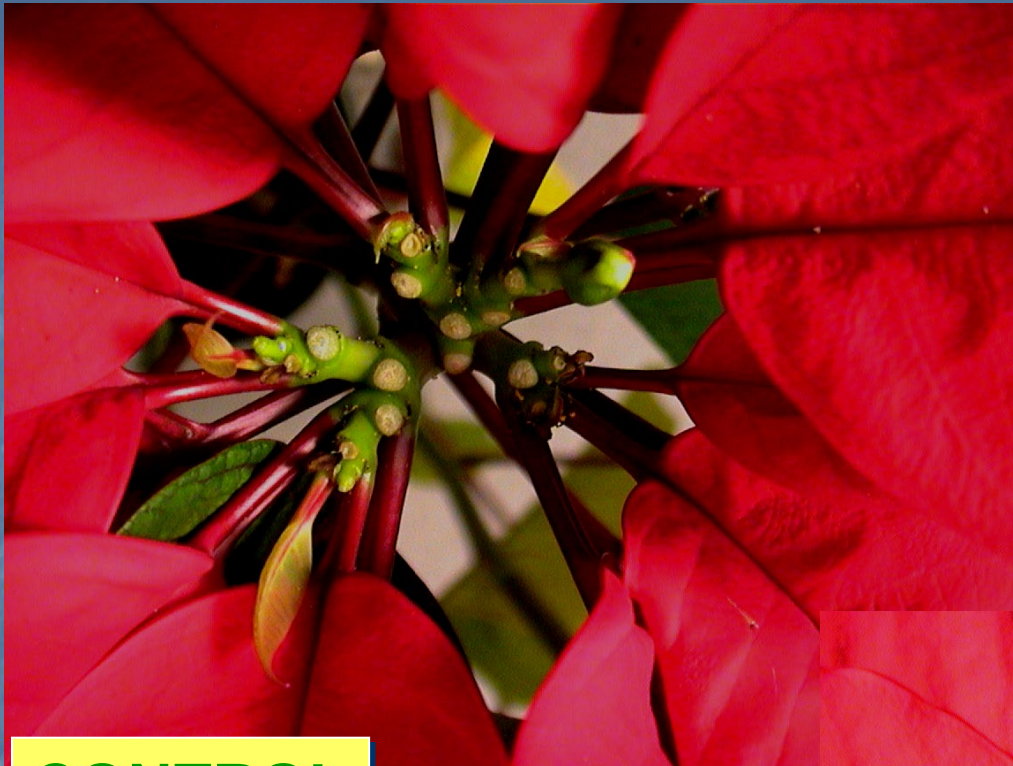
Control

TDZ

Plants sprayed 12/20, prior to placing in the interior environment
Photographs taken 1/19.

Leaf loss: Control = 23

TDZ = 1

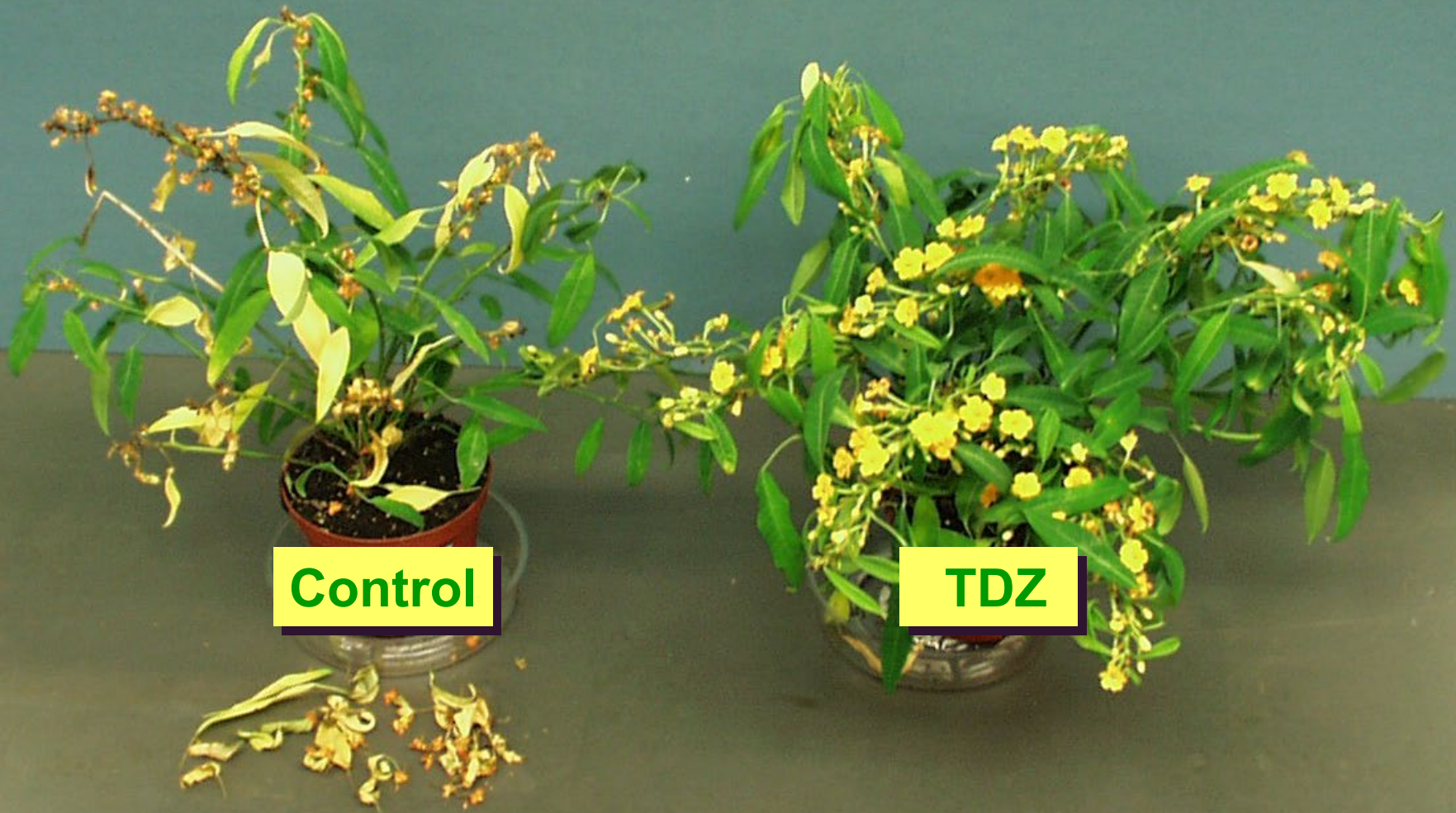


CONTROL

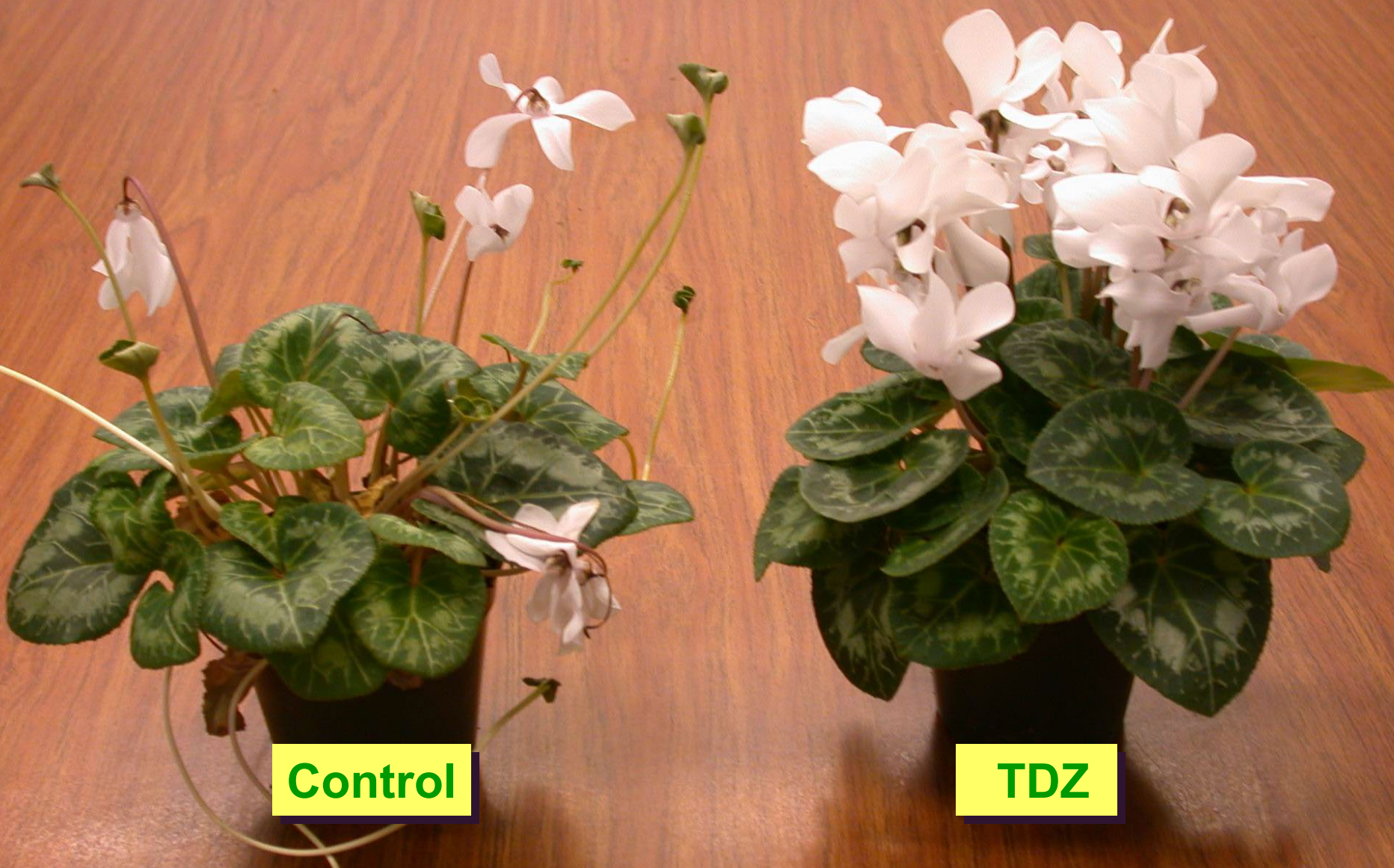
5 μ M TDZ



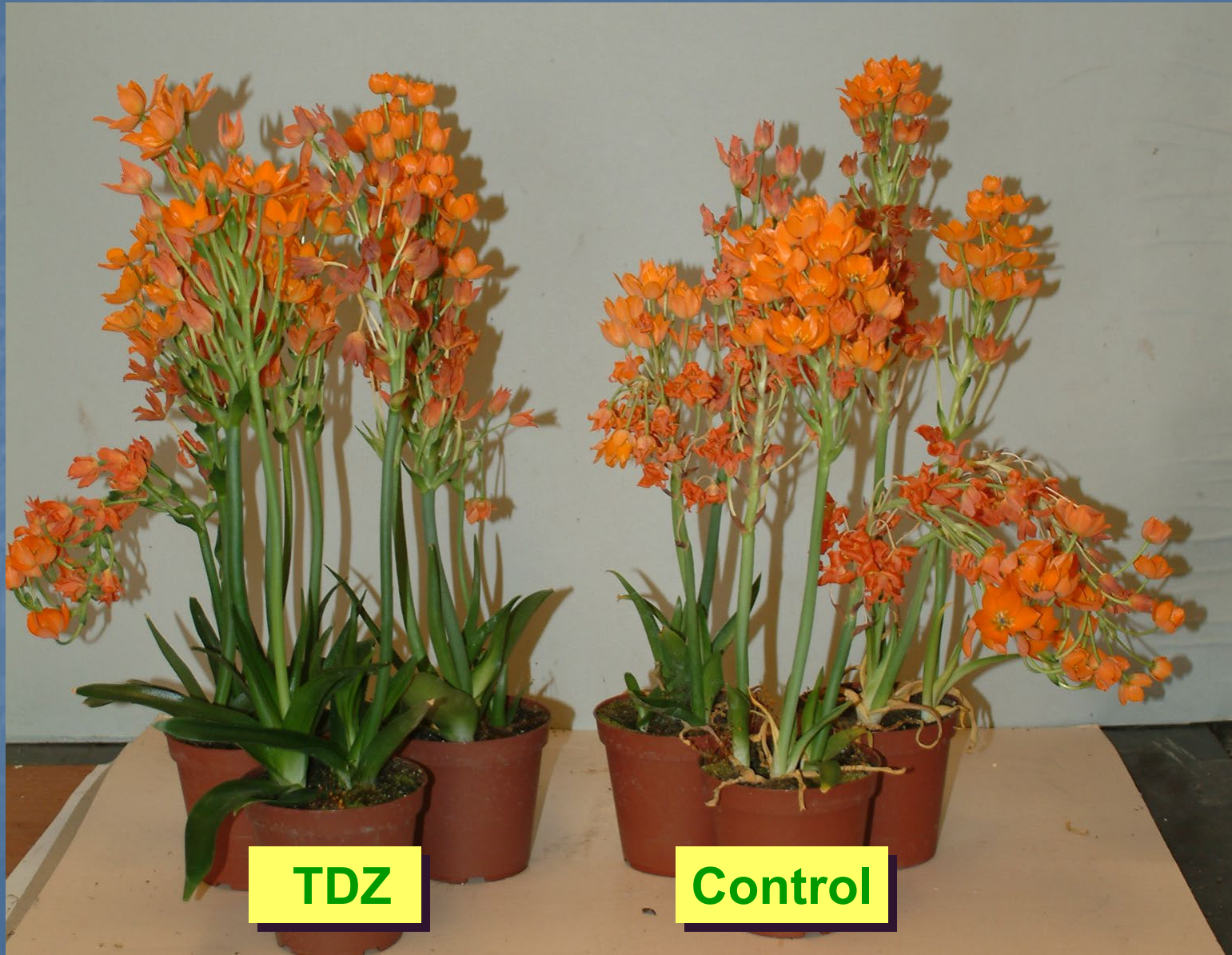
Effects on *Euphorbia fulgens*



Effects on cyclamen



Effects on Ornithogalum



Freesia after 2 weeks



Mechanical damage

- Petals are delicate
- Flower boxes are not very strong



Disease

- *Botrytis cinerea*
- Grey mold – watch for condensation
- Spores accumulate on:
 - Dead plant materials
 - Cooler walls
 - Evaporators



Food

- Flowers need food to grow and develop
- Sugar (sucrose, glucose, or fructose) provides all that is needed
- Vase solutions should contain 1.5 – 3% sugar
- Bacteria like sugar too – use a bactericide

Food



Sugar pulsing to provide food



Effect of sucrose pulse on Eustoma



Effect of sucrose pulse on Eustoma

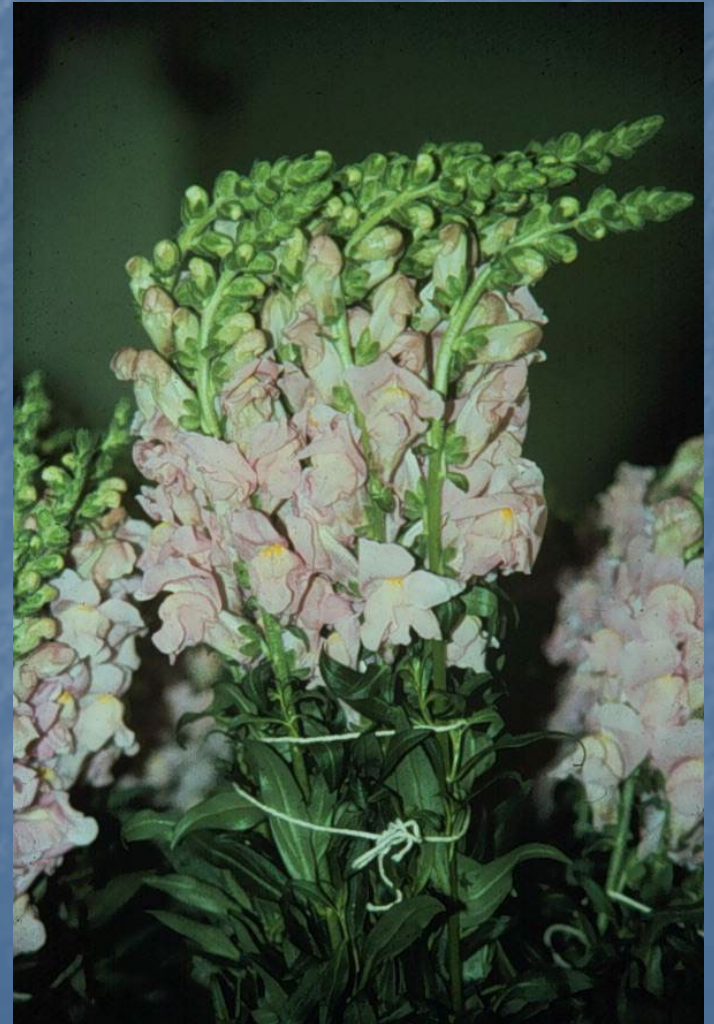


Effect of different foods



Continued growth

- Gravitropism
- Phototropism



Continued growth



Continued growth



QUESTIONS?

