

Heat and other Abiotic Disorders of Tomatoes



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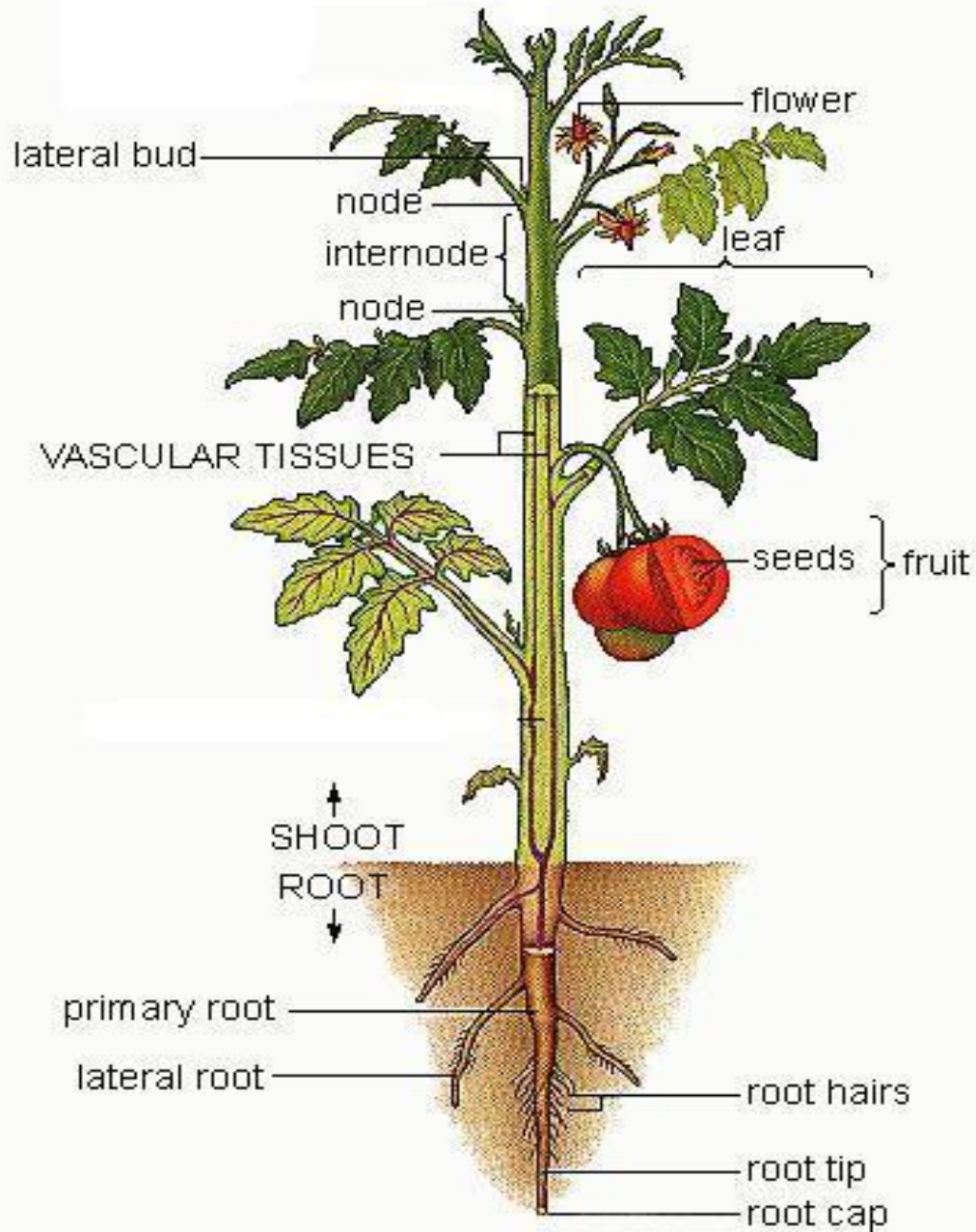
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Blossom end rot









A steady supply of water through the plant is one of the best management practices for blossom end rot.

In very sandy soils, need to be sure to have a % saturation of Ca of 55-70%

Soil (2,000-4,500 ppm) and tissue (2-5%) tests should show a moderate to high level of Ca





- ❖ Although it looks bad, leaf roll rarely effects plant growth, fruit yield, or ‘fruit quality?’.
- ❖ Reduce symptoms by maintaining consistent, adequate soil moisture, which also will reduce blossom end rot.
- ❖ You also should not prune heavily during hot, dry conditions or over-fertilize with nitrogen.



The cause of catface is still not fully understood.

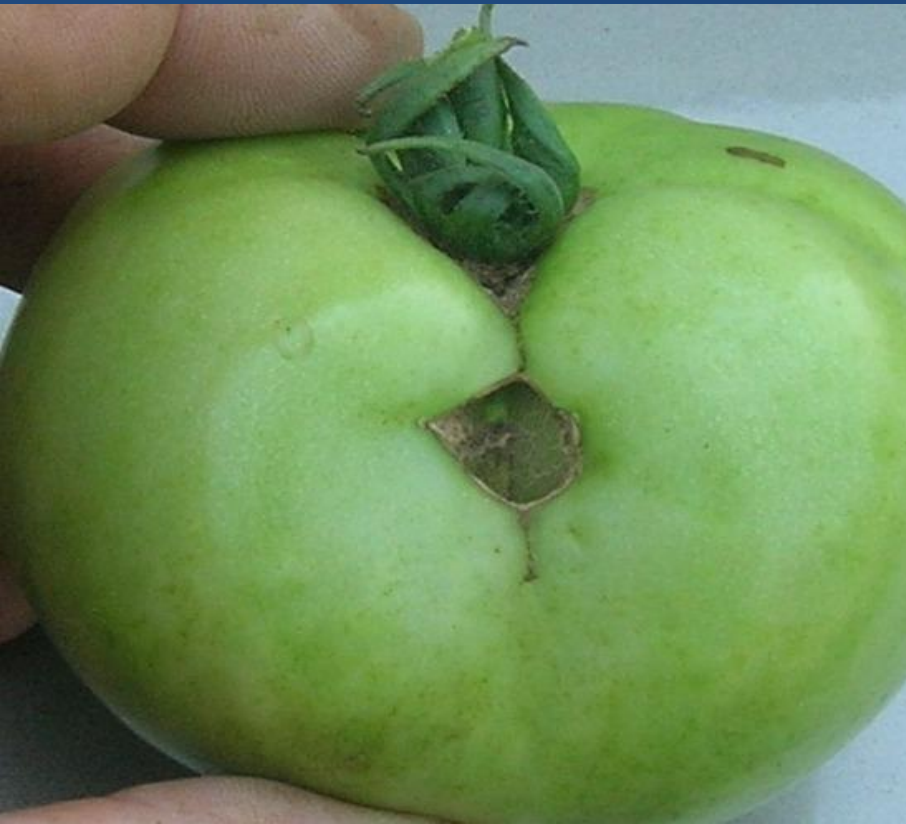
Cold temperatures during flowering have been shown to increase incidence of catface, as has extreme fluctuations in night versus day temperatures.

Chilly weather ($\sim 50^{\circ}\text{F}$ or lower) at the time of blossom set distorts and kills particular cells that should have developed into fruit, resulting in the deformities.

The disorder is most often observed in first-formed fruit.



Zippering is thought to be caused by the anthers (the pollen-producing flower part) fusing to the ovary wall of newly forming fruit. This disorder occurs more frequently in cool weather.



fruit cracking



G Johnson

Concentric cracking



Radial cracking





Rain check











No fruit
under
shade had
any
rain-check
or sunscald
tomatoes

32.6% of fruit
in
No-shade plots
had rain check

Heat Stress

Occurs in tomatoes when daytime highs are $\geq 88-90^{\circ}\text{F}$ and nighttime lows only get down to $68-70^{\circ}\text{F}$. These temperatures may result in blossom drop, fruit abortion and fruit ripening problems in tomatoes. At these temperatures the pollen can become sticky and nonviable, preventing pollination from occurring and causing the blossom to drop.















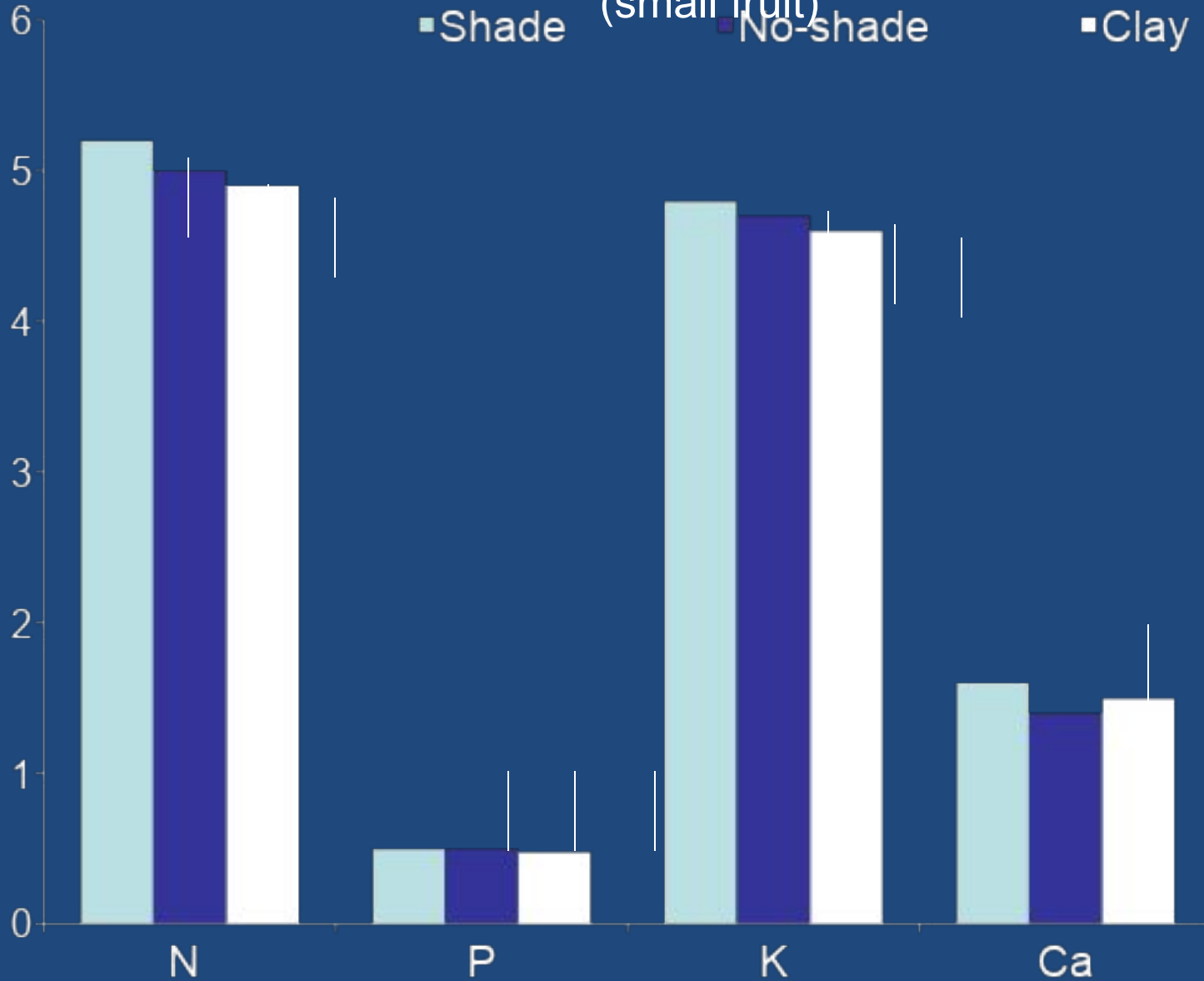




Tissue Readings

(%)

■ Shade (small fruit) ■ No-shade ■ Clay

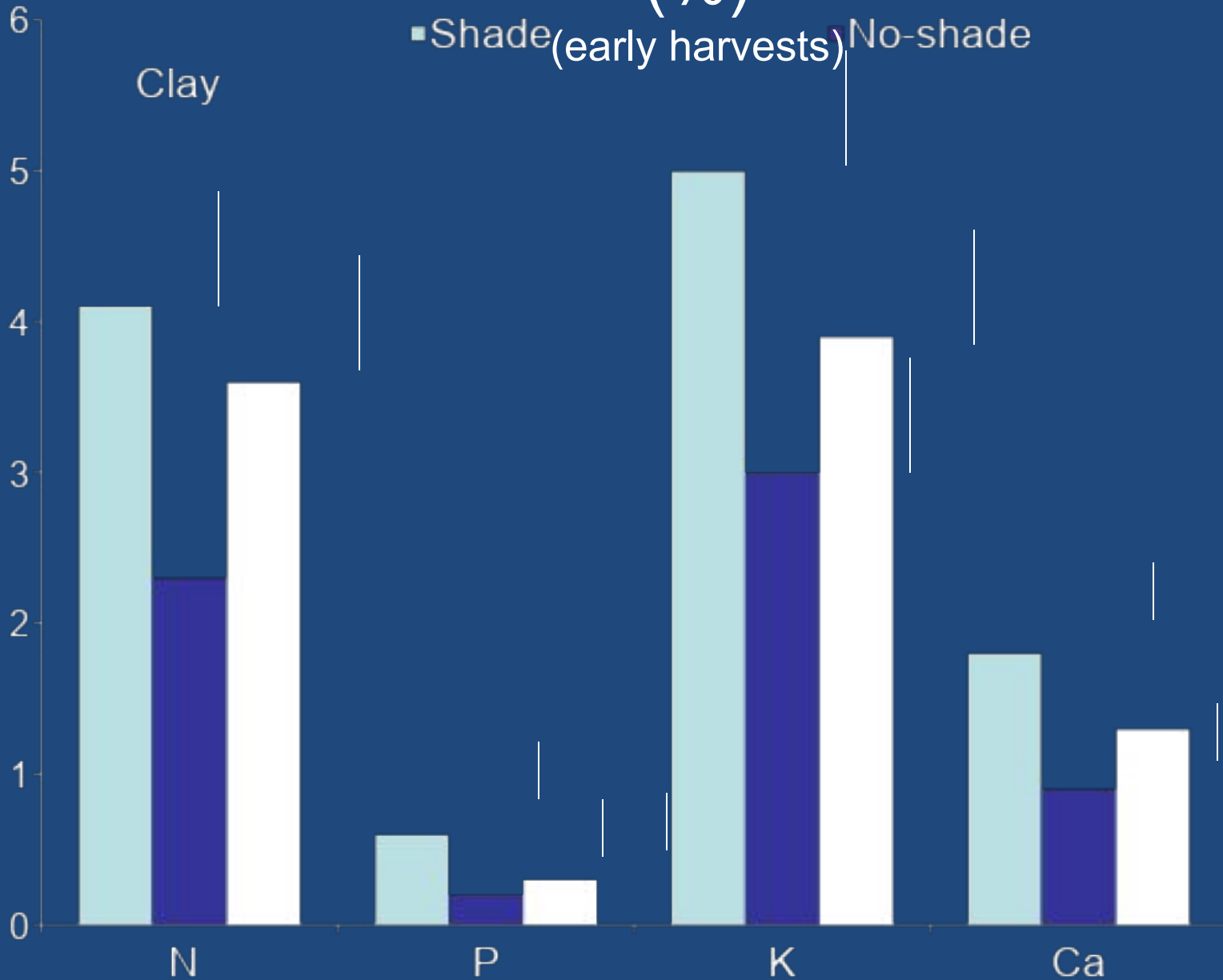


Tissue Readings

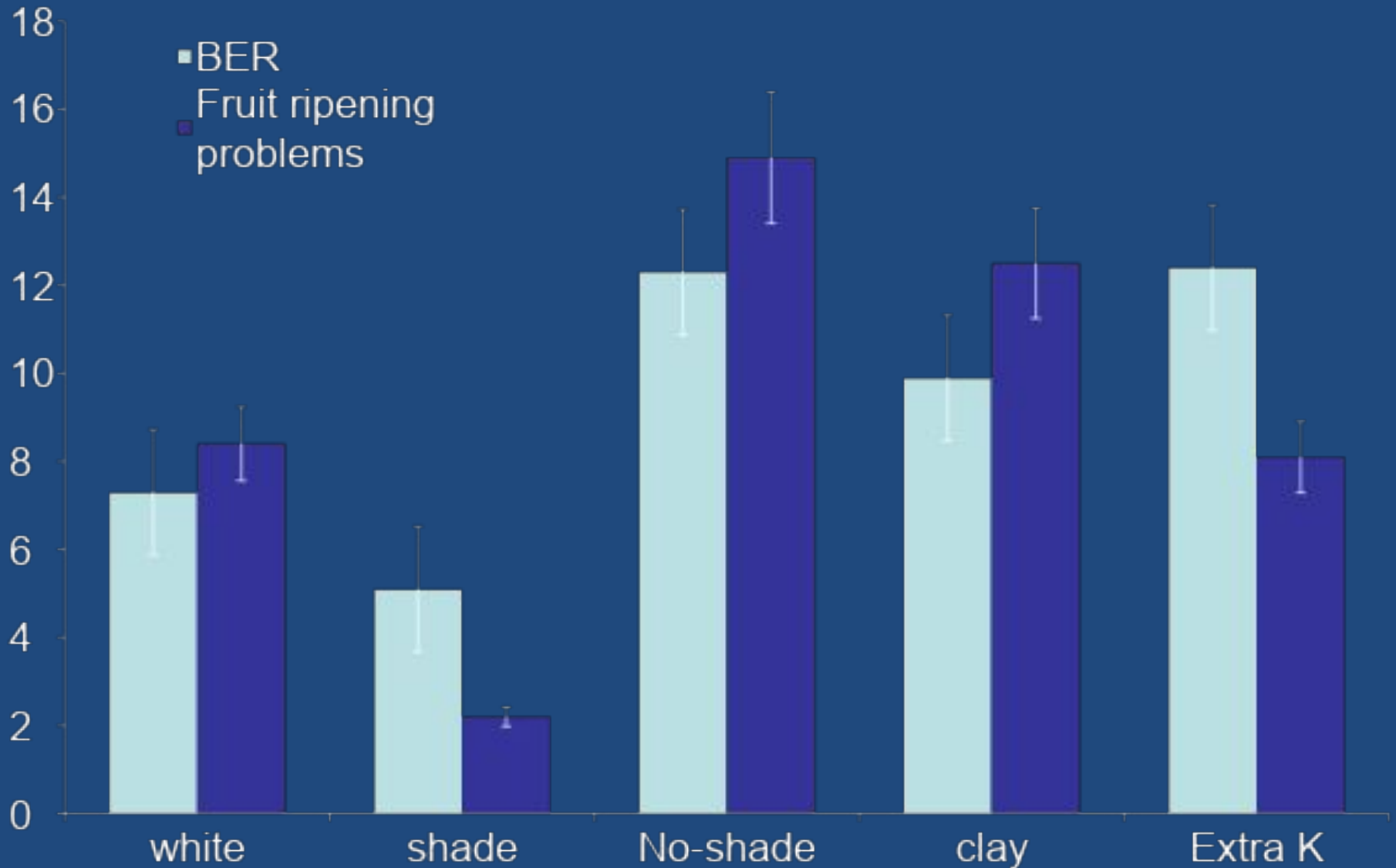
(%)

■ Shade (early harvests) ■ No-shade

Clay

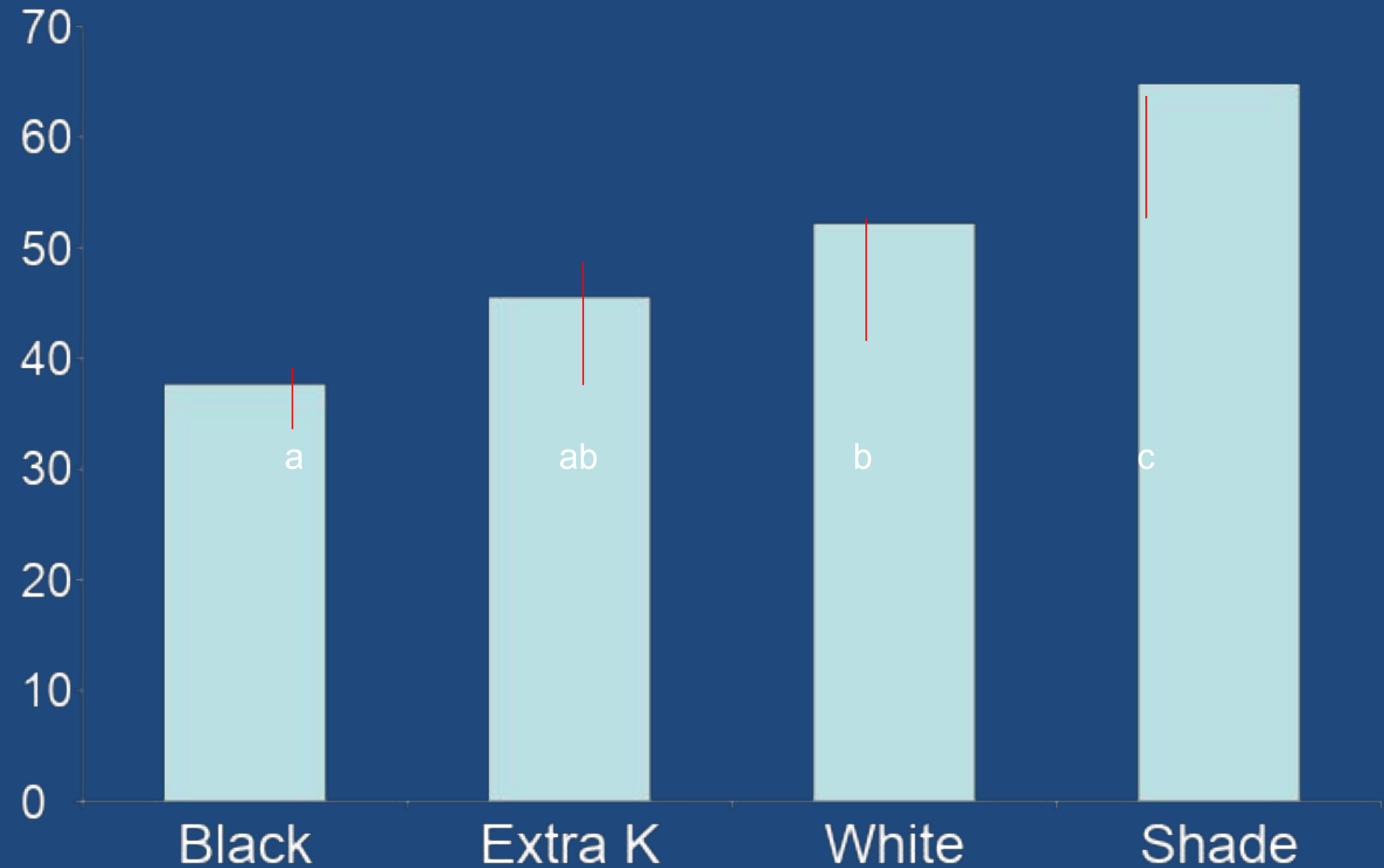


% Fruit quality problems



Marketable Yield of Tomatoes

(lbs/plot)











Shade



White plastic



No Shade



Extra K



No Shade



Shade



Summary of UDEL shade work

In 2019 shade treatments produced more marketable peppers than the unshaded plots.

Yield of marketable first harvest (early Aug) for shade was 18x greater than unshaded.

Yield of marketable second harvest (Sept) was twice that of unshaded.

Shade did not reduce internal white tissue in tomatoes to the point of achieving marketability.



Questions

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Edema

- ❖ Basically overwatering, high humidity and low or poor light are the major causes for the development of edema.
- ❖ Therefore, avoid overwatering plants especially during cool temperatures when they should be kept slightly dry.
- ❖ Keep humidity levels below 70% by enhancing airflow around the plants and by spacing the plants farther apart.
- ❖ GH ONLY: Increase light quality by providing a more “full-spectrum” of light output, with significantly more short-wavelength energy (i.e., UV light)