



Physiological Responses of Cotton Leaves to Shading and Aging

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Introduction and Objectives

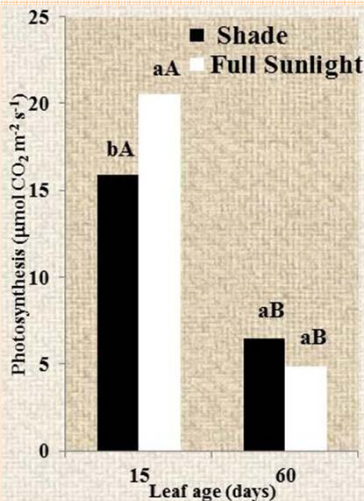
Shading causes early stomatal closure, decreasing gas exchange and photoassimilate production. Additional decreases in leaf photosynthetic rates result from leaf aging. We aimed to show the effects of leaf aging with short and long term shading on cotton physiological response.

Materials & Methods

- Greenhouse at Botucatu, São Paulo State – Brasil
- Treatments: leaf age (15 and 60 days old) x preconditioning (long term shading - shade for 4 days before evaluations) with two sub-plots (short term shading- shaded or no-shaded at the time of measurement).
- A black shade cloth was placed approximately 2 centimeters above the leaf to reduce light intensity around 50%.

Results

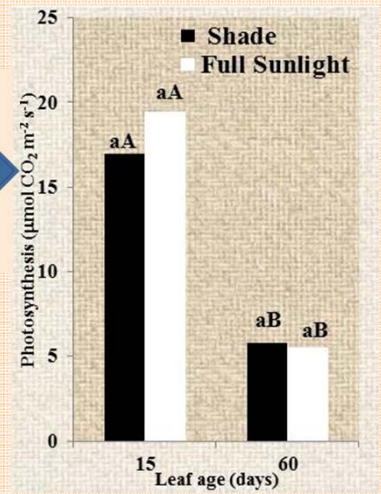
Long term shading



Long term shading decreased net photosynthesis by 22.5% in 15 days old leaves

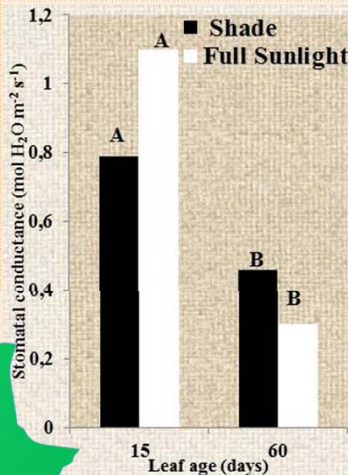
No differences in 15-days old leaves under short term shading

Short term shading

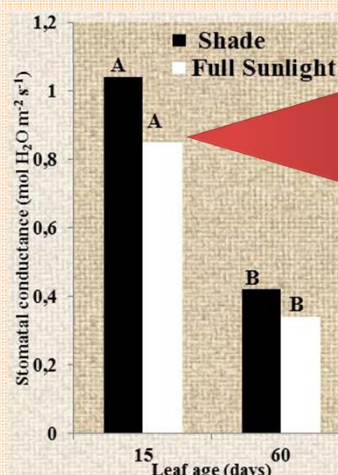


Shade applied to old leaves did not affect gas exchange

Long term shading



Short term shading



Higher Stomatal conductance in young leaves...

... but no differences due to shading

Conclusions

- ❖ No effect of short term shading on photosynthesis
- ❖ Shade applied for 4 days decreased photosynthesis in youngest leaves.
- ❖ Stomatal conductance decreased by leaf aging, but not by shading.

Implication

What is the real implication of narrow rows (auto-shading) on canopy photosynthesis?



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