

Effect of drought stress on different organs of Pineapple using destructive and non-destructive indicators

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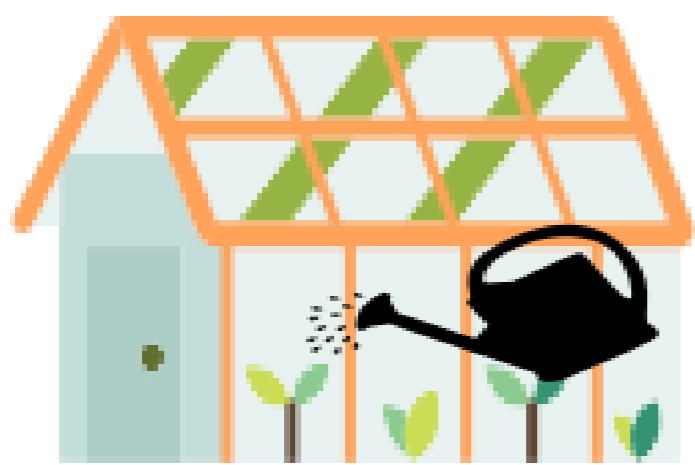


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INTRODUCTION & AIM

The objective of this study is to evaluate different indices, destructive and non-destructive, that detect water stress in *Ananas comosus* L. Merr plants under different water stress conditions with different percentages of field capacity (FC) in greenhouse condition.

METHOD



Treatments

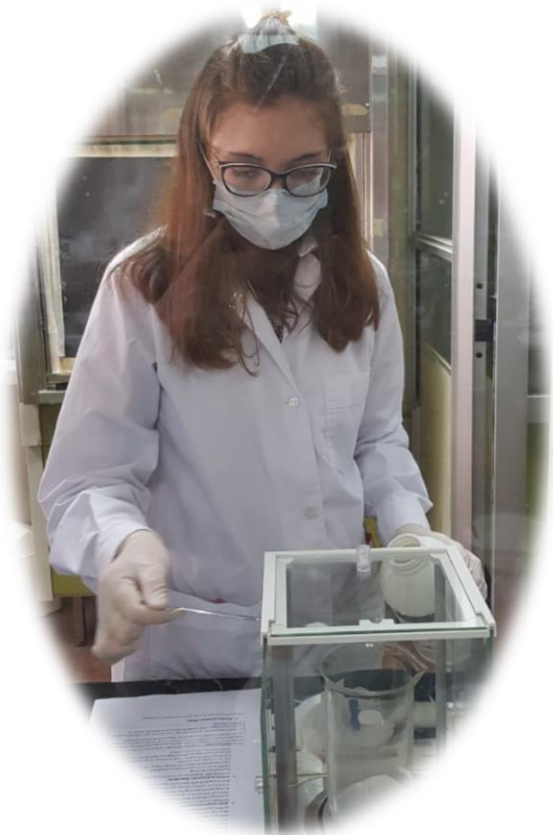
100%FC or CC
50%FC
25%FC

Harvesting moments

Leaves and stems were harvested every 30 days for three months

Measurements

- Relative Water Content (RWC)
- NDVI
- Proteolytic activity (PA)
- Protein content (PC)



RESULTS

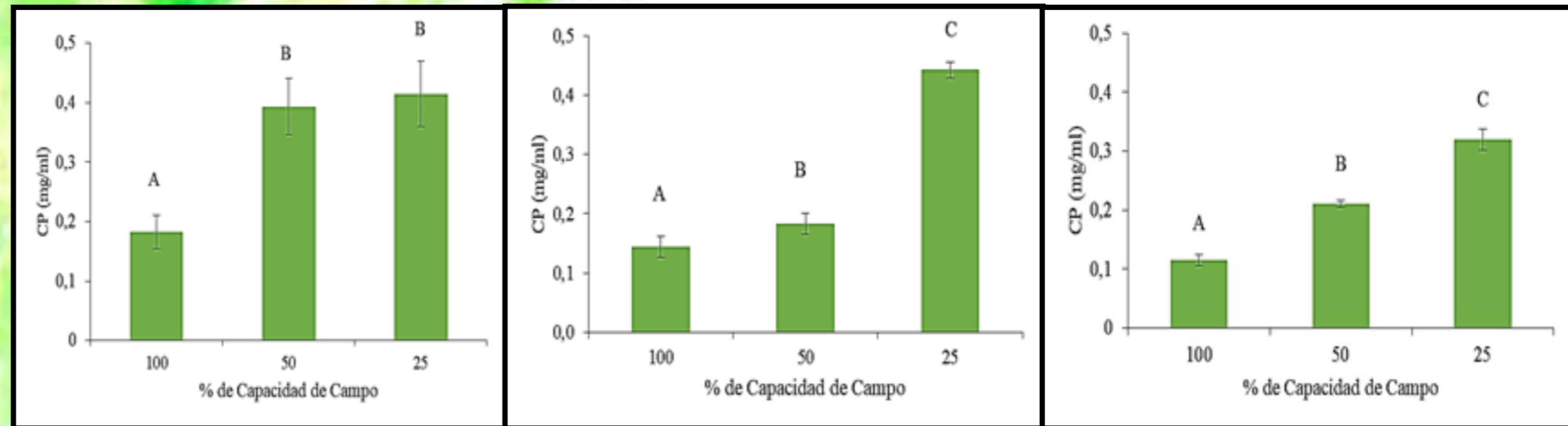


Figure 2. Protein content (PC or CP) of the leaves every three months (from left to right). Different letters indicate significant differences between means according to the Tukey test at 5%. Bars represent standard deviation (n=3).

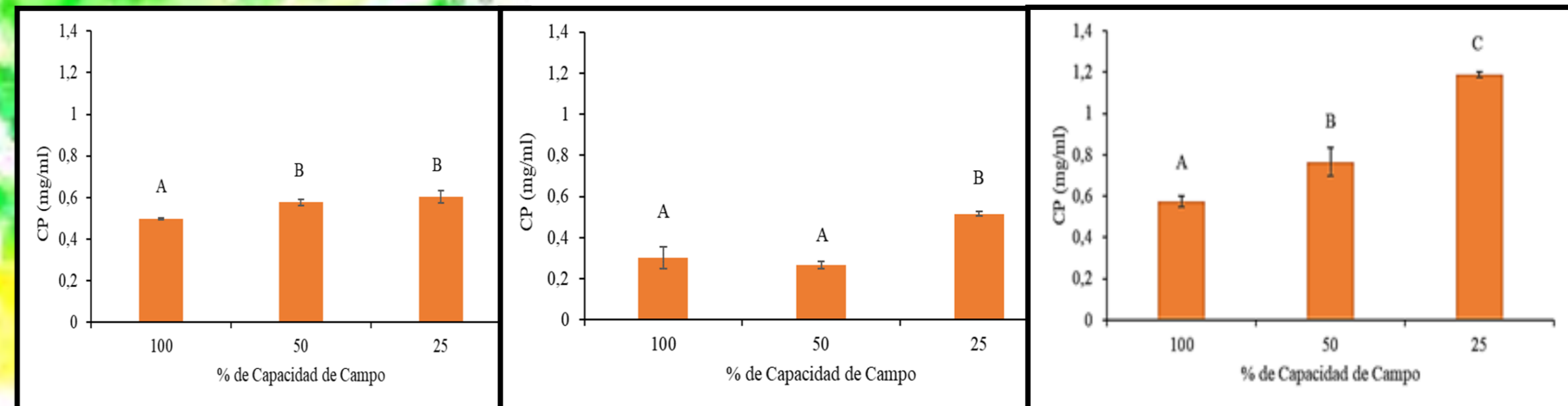


Figure 3. Protein content (PC or CP) of the stems every three months (from left to right). Different letters indicate significant differences between means according to the Tukey test at 5%. Bars represent standard deviation (n=3).

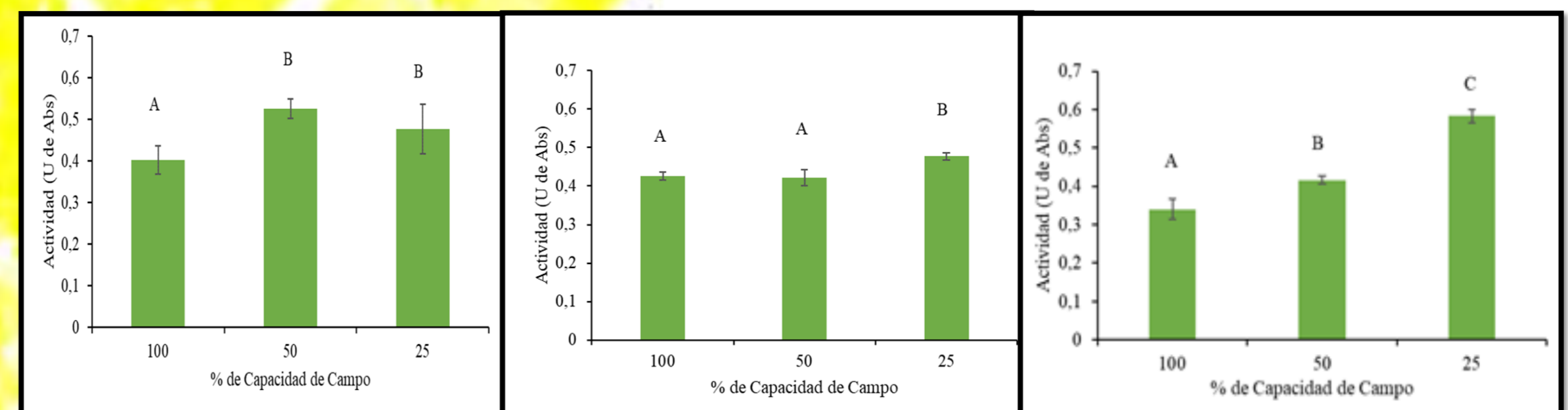


Figure 4. Proteolytic activity (PA) of the leaves every three months (from left to right). Different letters indicate significant differences between means according to the Tukey test at 5%. Bars represent standard deviation (n=3).

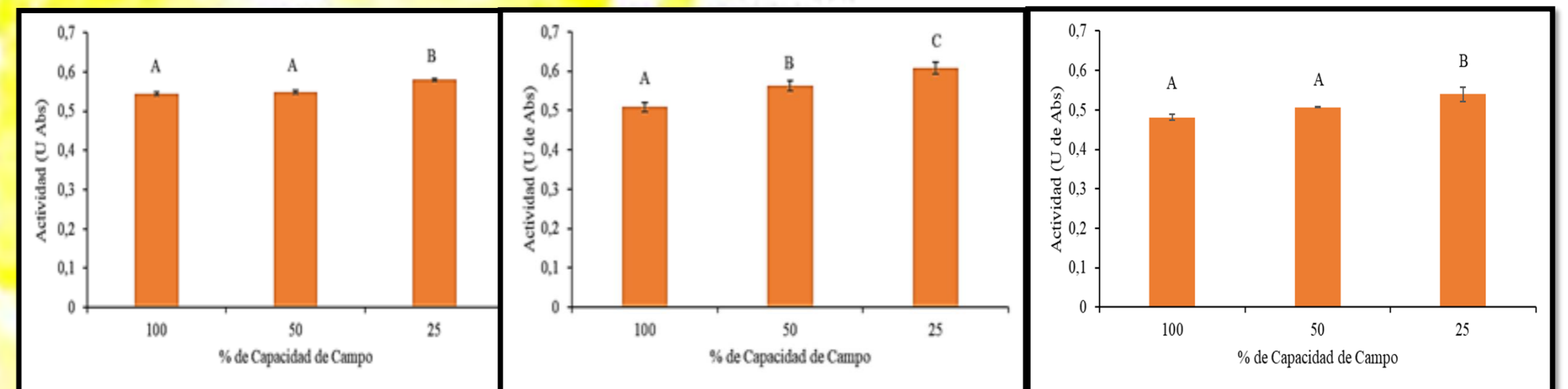


Figure 5. Proteolytic activity (PA) of the stems every three months (from left to right). Different letters indicate significant differences between means according to the Tukey test at 5%. Bars represent standard deviation (n=3).

RESULTS

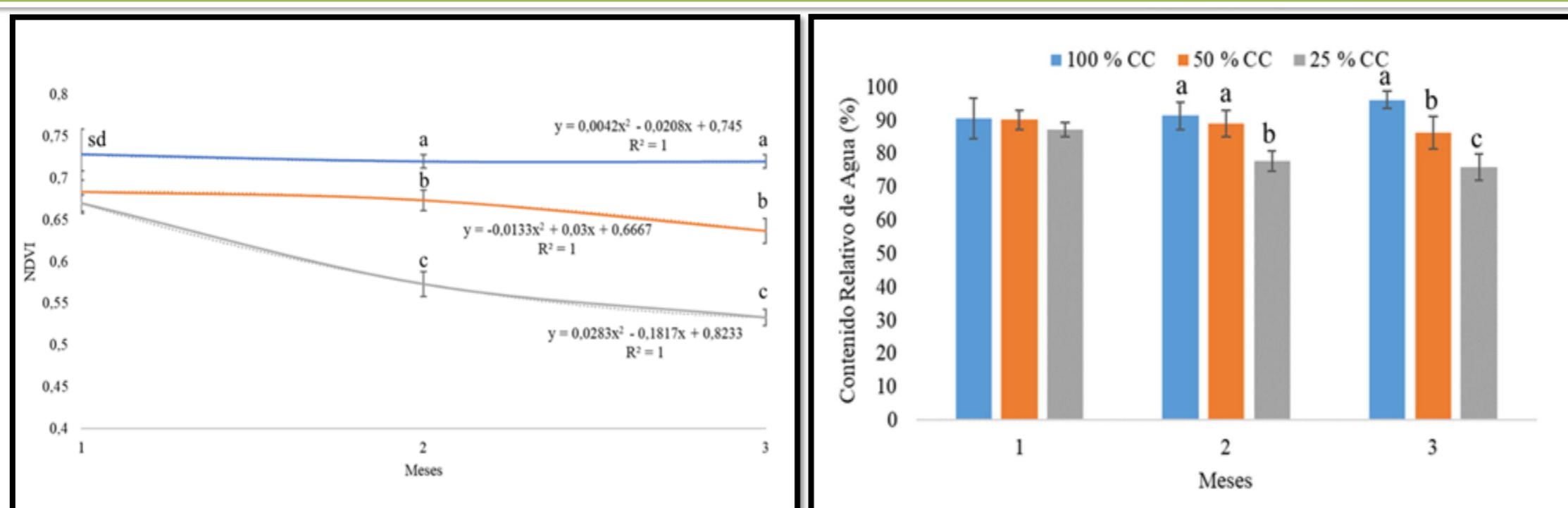


Figure 1. NDVI values taken at 12 pm from pineapple leaves subjected to 100% (blue line), 50% (orange line) and 25% (grey line) treatments at field capacity (FC) for 3 months. Different letters indicate significant differences between treatments ($p < 0.05$). Sd: no statistical differences (left). RWC of pineapple "D" leaves subjected to 100, 50 and 25% treatments at field capacity (FC) for 3 months. Different letters indicate significant differences between treatments ($p < 0.05$) (right).

CONCLUSION

PA and PC increased in both the leaves and stems as drought stress intensified, with a significant increase from 100% to 25% FC over the course of the experiment. The non-destructive indicator (NDVI) showed differences in the first month, while the destructive indicators (RWC, PA, and PC) in both organs exhibited statistical differences by the second month of the experiment. The NDVI proved to be a highly sensitive indicator of drought stress in pineapple plants and did not require the destruction of the plant.

REFERENCES

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