Loblolly pine tip burn trial

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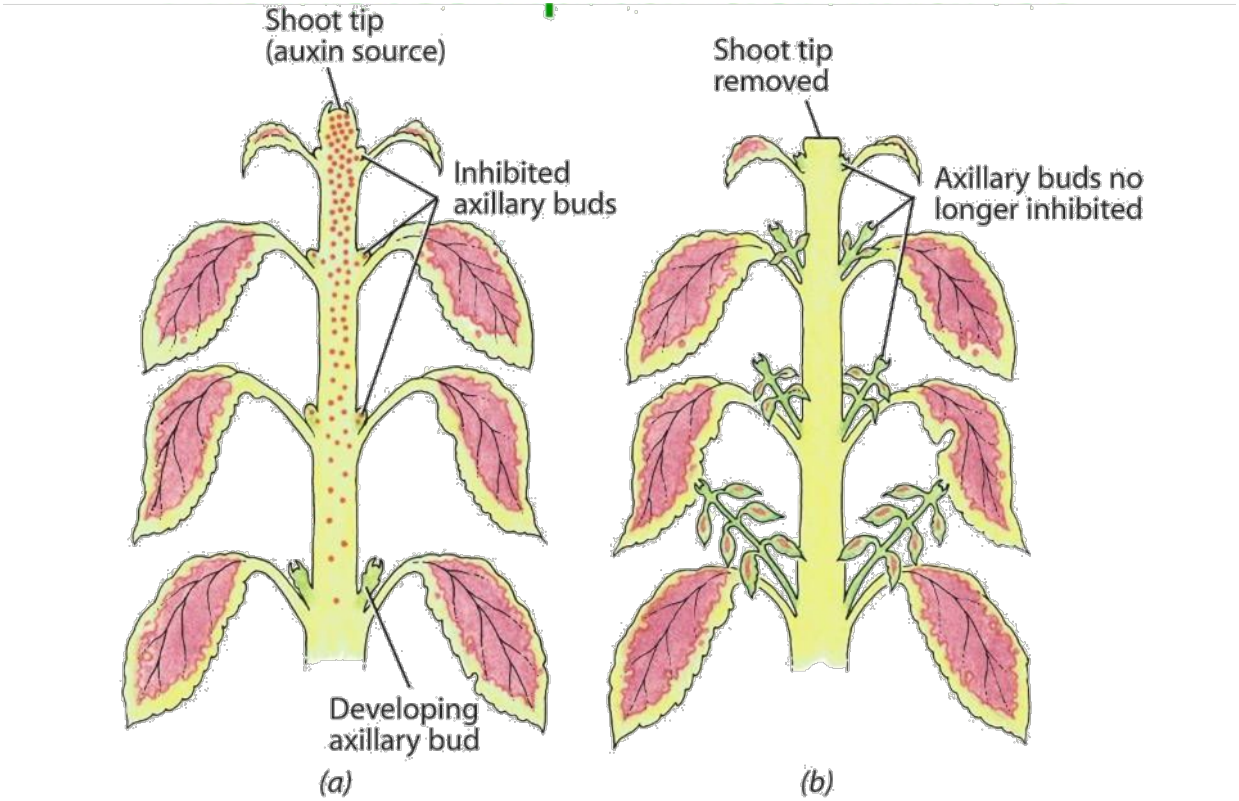
SOUTHERN FOREST NURSERY MANAGEMENT COOPERATIVE

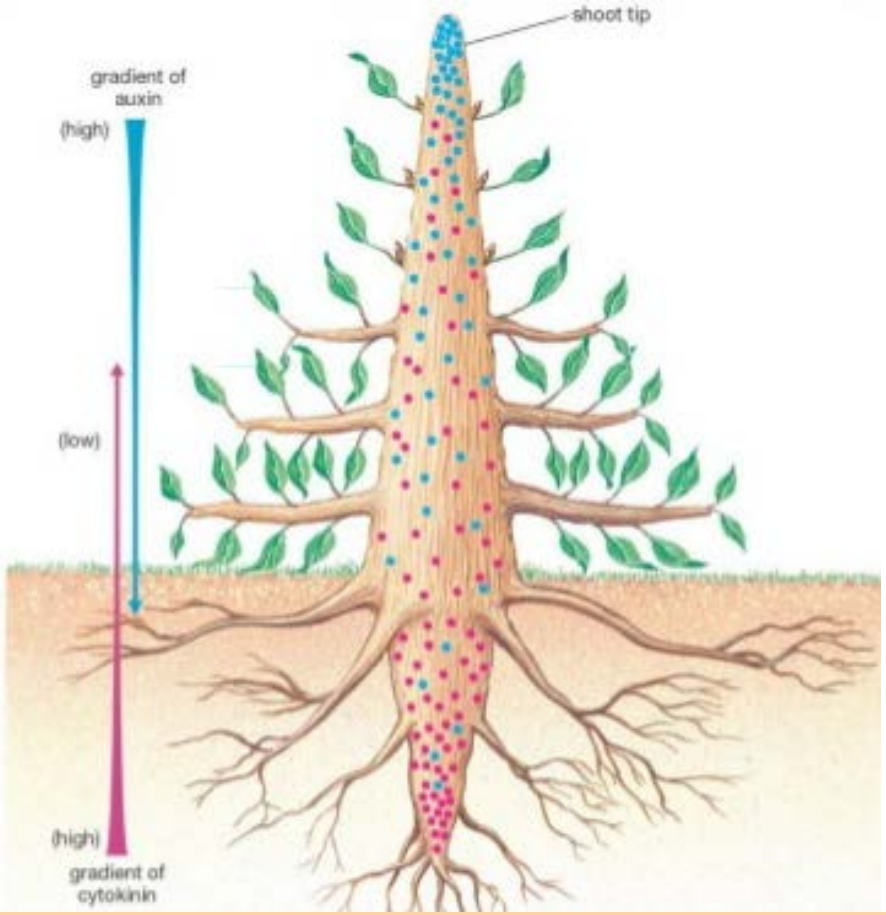
Introduction

- Establishment problem was reported
- Seedlings that had a shoot tip were growing, however, those that had a "burned" shoot tip had little root growth 4 months after planting
- Freeze injury had killed the shoot tip, resulting in a "burned" appearance

Auxin information

- Auxin – Indoleacetic Acid (IAA) released from shoot tip stimulate cell elongation in the stem and promotes apical dominance by suppressing lateral buds (concentration related).
- Cytokinins, produced in the roots, can stimulate lateral buds if the shoot tip is removed





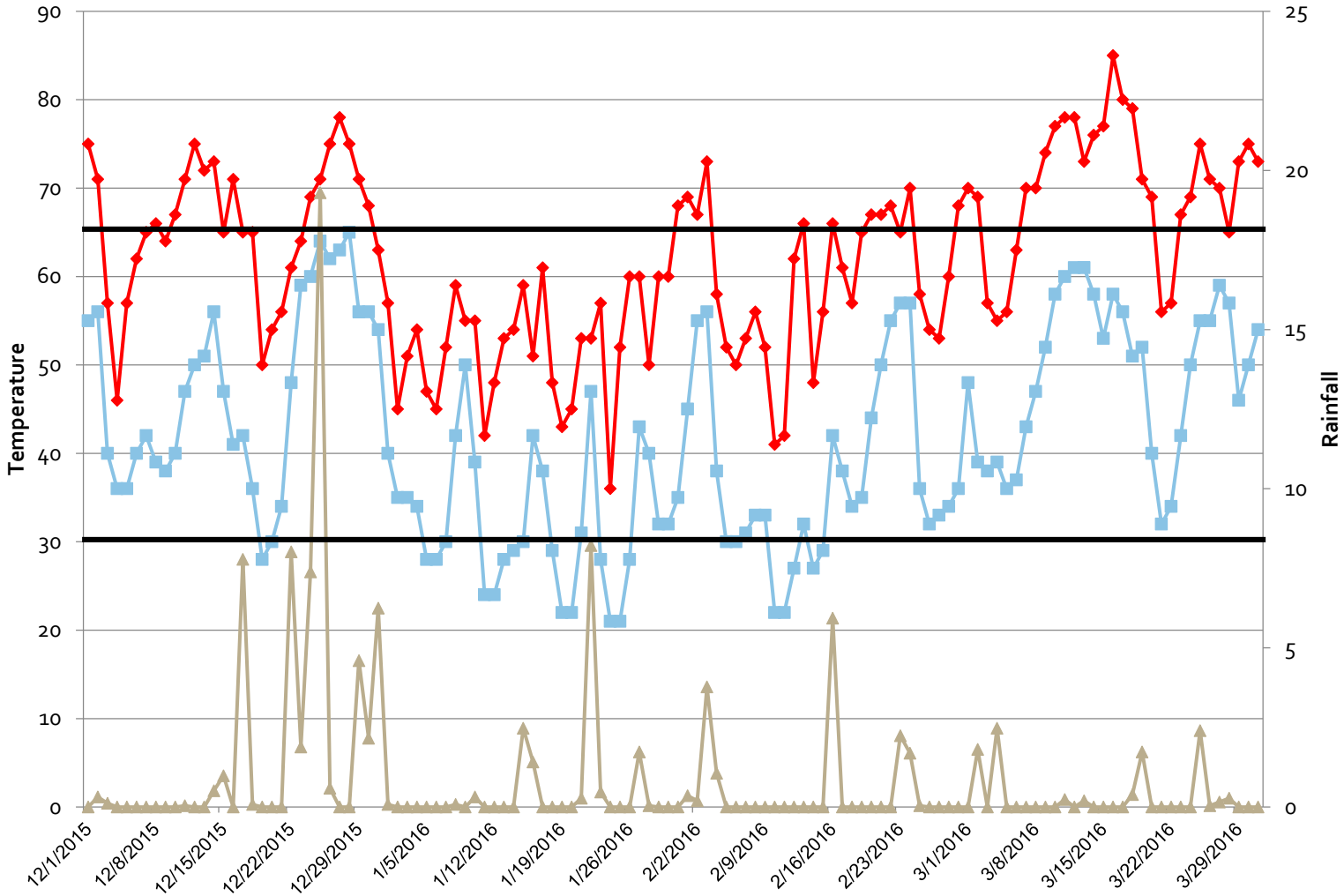
Methodology

- To determine the long term impact on out planted seedling survival as a result of the "burned" shoot tip when exposed to various levels of environmental stress
- Three levels of planting stress
  - Low stress – Greenhouse (exposed to moderate temperatures and were watered)
  - Moderate stress - Stress box (amount of water was regulated but seedlings were exposed to ambient temperatures)
  - Stressed - Trophatron (received no supplemental water and exposed to ambient temperatures)
- For the study every second seedling had its growing tip burned
- Planted 16 December 2015
- Data recorded in April 2016

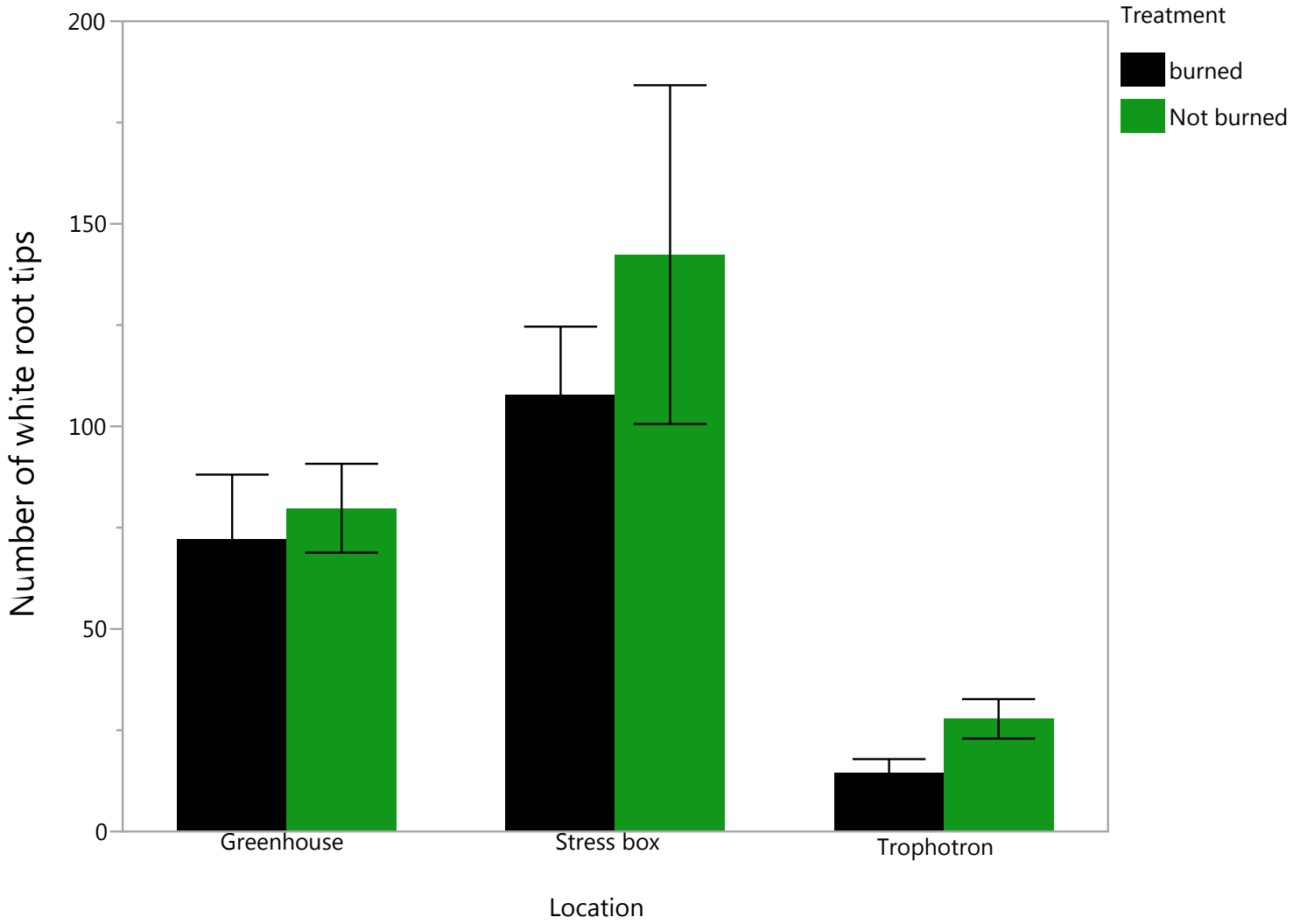
Methodology

Results

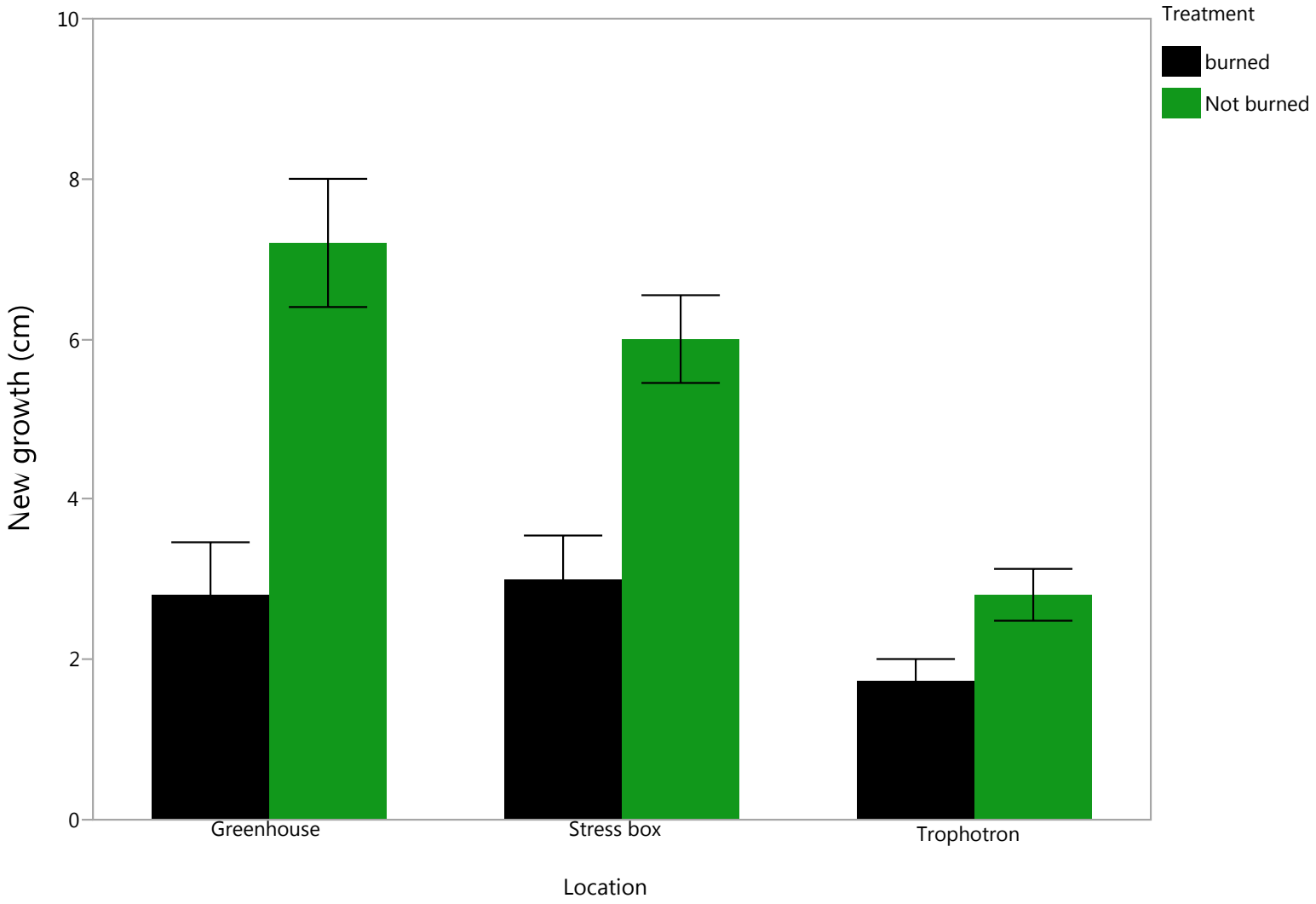
Temperature and Rainfall



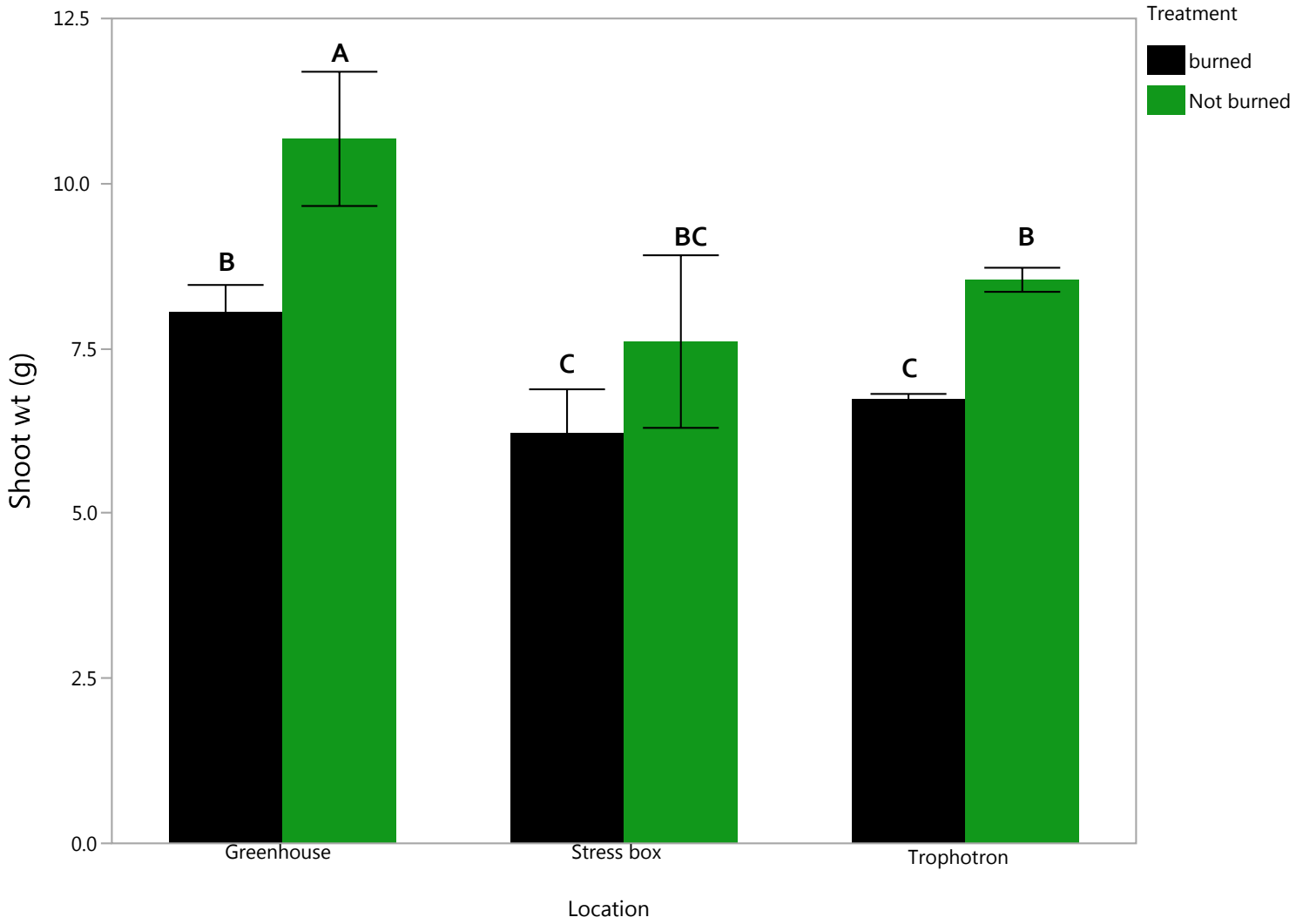
Results of RGP



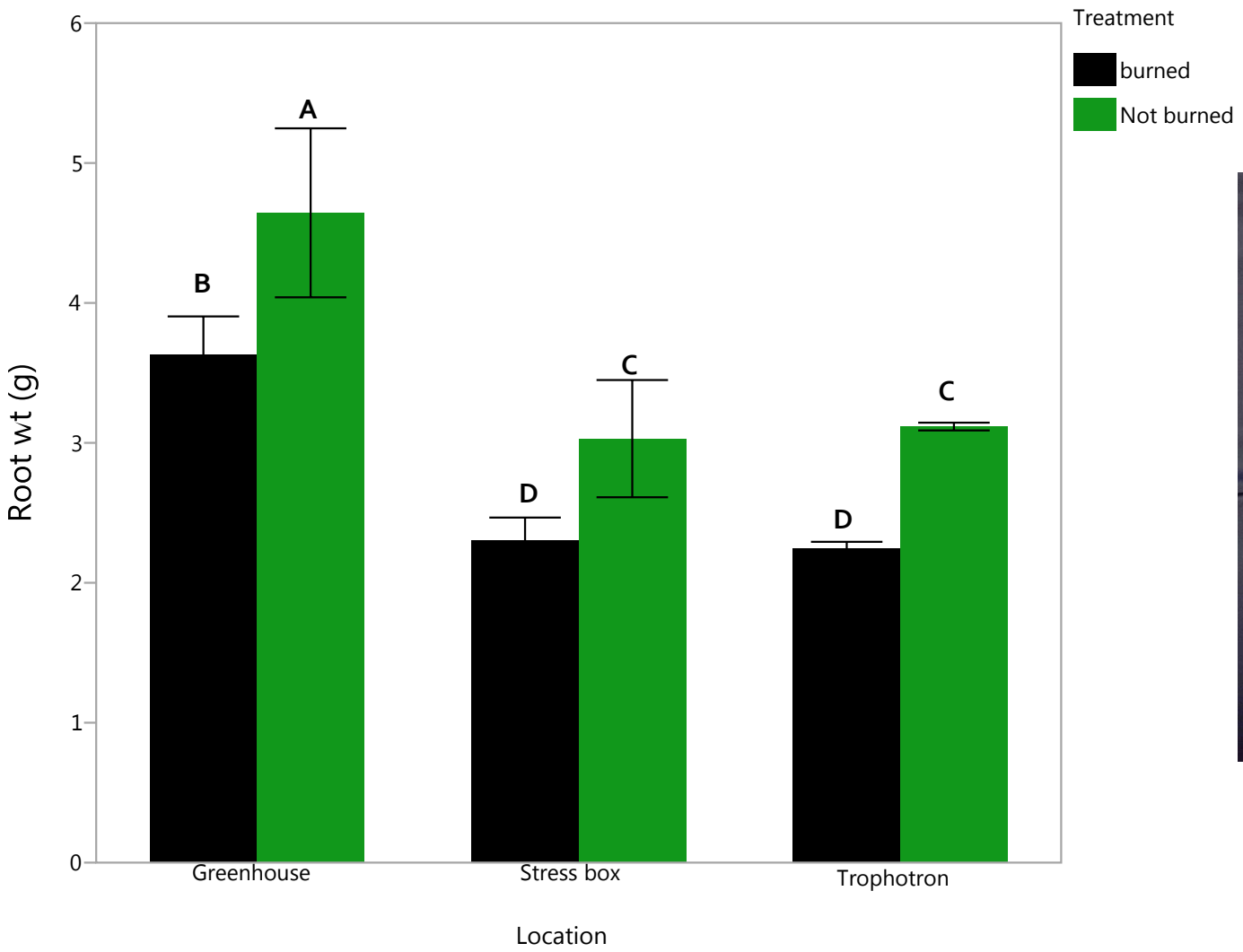
Results of new growth



Results for shoot weight



Results for root weight



Conclusions

- Water and temperature stress had an effect on root and shoot development
- Burning the tip resulted in significantly less root weight, shoot weight, new root growth and fewer new white root tips when compared to the unburned control
- Tip dieback due to freeze injury / drought, significantly affects root growth infield and could also affect survival