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RESEARCH WITH IMPACT

DRIVING YIELD AND FORAGE IN DOUBLE-PURPOSE PEANUT (*ARACHIS HYPOGAEA* L.) FOR CURRENT AND FUTURE CLIMATES UNDER ELEVATED [CO_2] IN SUBTROPICAL AND TROPICAL ENVIRONMENTS



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Research aims

Investigate the impacts of increasing CO_2 on plant metabolism that could lead to physiological, yield and kernel quality changes to dual-purpose peanut cultivars

Objectives

- Evaluate open top chambers design, construction, and testing
- Investigate the effects of elevated CO_2 on peanut cultivars physiology
- Investigate the effects of elevated CO_2 combined with simulated grazing at different plant heights/growth stages on yield and peanut quality
- Determine soil amelioration magnitude generated by peanut ability to fix nitrogen

Methodology

- CO_2 enrichment in open top chambers
- Morphology measurements (e.g., plant shoot length, leaf area, number of flowers, number of pods and seed size)
- Non-invasive plant physiology measurements such as e.g., leaf gas exchange parameters (LI-COR6800), chlorophyll (SPAD)
- Chemical analysis such as e.g., oleic acid content, antioxidant and bioactive compounds, C:N ratio, proteins, and nutrients composition/concentrations.
- Peanut hay quality analysis (e.g., crude protein, neutral detergent fiber)

Industry impact

This project will benefit the northern Australian agricultural industry by assisting them to select appropriate crop types and cultivars for profitable production under a higher CO_2 future.