Department of Agriculture and Fisheries

Data-driven insights for cotton farming in the northern territory: An exploratory analysis

Edward Mwando
Cropping Group Leader

NORTHERN TERRITORY GOVERNMENT

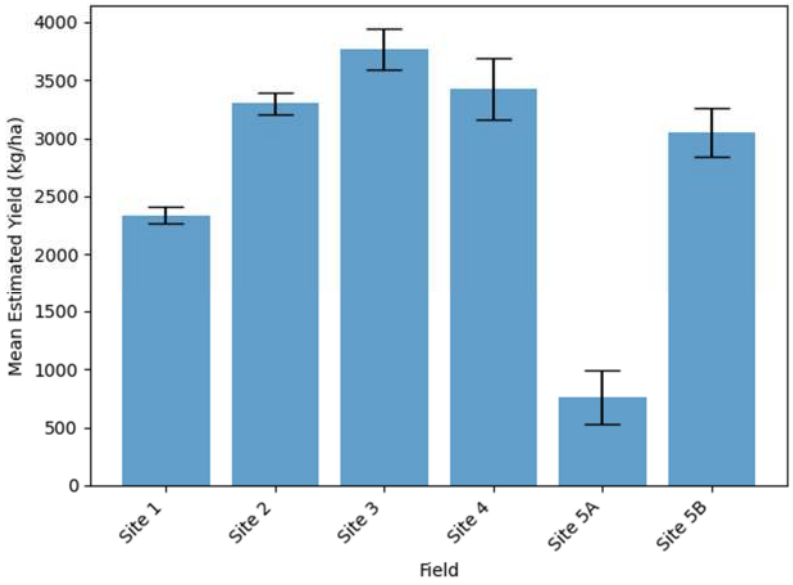
Introduction

- Recent investments in cotton research and development and the establishment of a gin at Katherine.
- Renewed interest in growing dryland/rainfed cotton in NT.
- Since 2018 commercial cotton growers have faced several production challenges that needs attention.
- The challenges
  - Crop establishment,
  - Limited crop rotation and cover crops options,
  - Nutrition pest management, and
  - pest and disease monitoring and management.
- Need for scientific validated to mitigate the challenges for the success of cotton growing in NT.

Method and Materials

- Replicated trials at KRS and DDRF, and 3 observational plots on growers' properties within Douglas Daly region all named 1 – 5 and two fields at 5 (A and B).
- RCBD was implemented at KRS and DDRF, while the three growers' sites were considered replicates.
- Site specific data, soil properties, cover crops, planting date and density, fertiliser, phenological stages, morphological and yield was recorded.
- Soil was sampled at pre-planting and after harvesting at 0 – 15, 15 – 30 and 30 – 60 cm in each paddock.
- Various data elements were transformed to render the dataset suitable for analysis.

Results

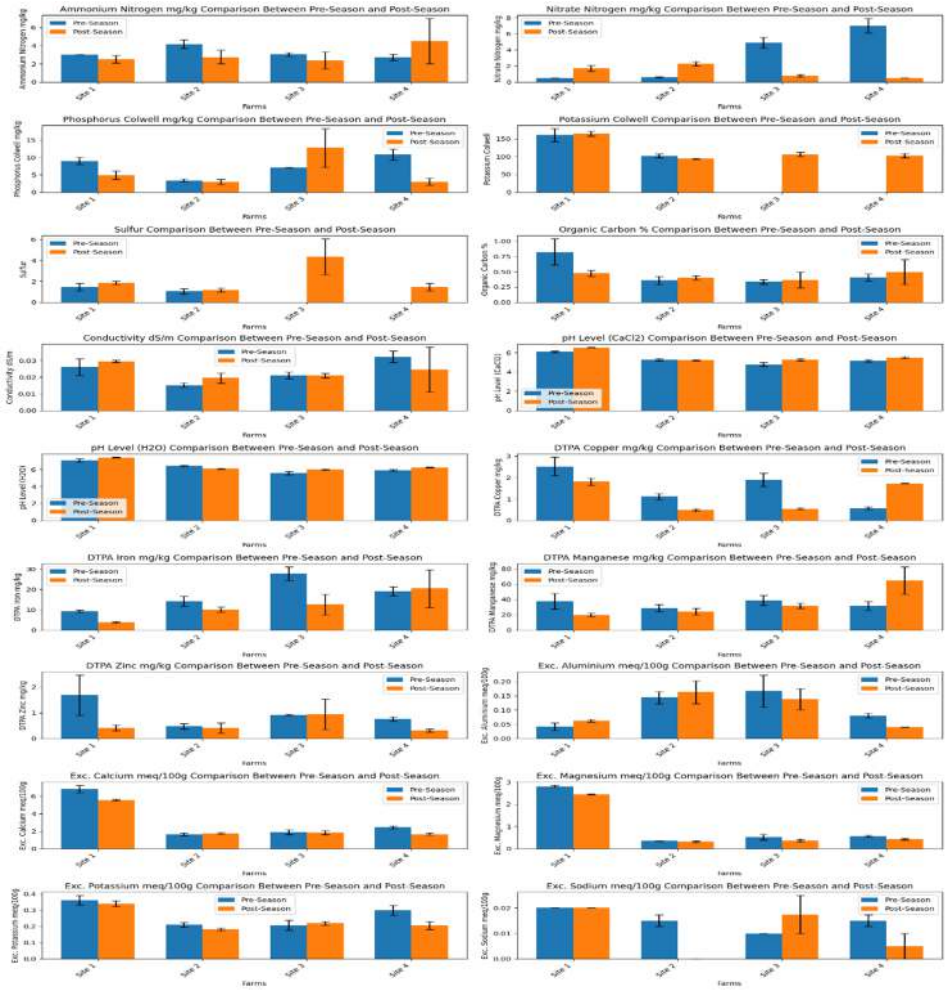


The mean estimated yield across different trial sites.

- DDR (sites 2-5) yields were generally comparable except for 5A.
- 5A had lower yield, because of gravely and sandier soil type.
- Site 1 (KRS) has low rainfall and lighter soils than other sites.
- A significant influence of cover crop biomass on yield and previous season's crops was evident and correlated with species.
- Forage Sorghum positively impacted yield, followed by natural regeneration, Cavalcade and Jarra Grass.

NORTHERN TERRITORY GOVERNMENT

Results



The changes in various soil characteristics across all sites before and after the season.

- 5A and B were not included, because of no preseason data for comparison.
- Inadequate amount of N in the soil across all the trial sites.
- All sites, except 1 and 4, fell short of recommended range of P .
- All trial sites maintained safe levels of conductivity.

NORTHERN TERRITORY GOVERNMENT

Conclusion

- Rainfed Cotton performs well in DDR (wetter and heavier soil) compared to KRS with lower precipitation and has sandy loam soil.

- This study presented new evidence demonstrating a strong correlation of soil nutrients and cover crops on cotton yield and environmental conditions of the NT.

- The findings suggest that optimizing soil nutrient management and incorporating appropriate cover crops can enhance cotton productivity in the region.

- Research is needed to explore the long-term impacts of these practices on soil health and sustainability.

Acknowledgement

- CRCNA, CRDC, GRDC and NT DAF funding.
- Participating commercial growers.
- Collaborating organisation and industry players.
- Dr Taghadomi-Saberi Saeedeh, Q DAF.
- Other staff- Cropping group, Plant Industry, DAF, NT.

NORTHERN TERRITORY GOVERNMENT

Thank You

NORTHERN TERRITORY GOVERNMENT