



Northern Territory Government



## Case Study: East Ranken Paddock, Alexandria Station



- *Barkly District*
- *Mitchell grass pastures*
- *Sustainable stocking rates*
- *Soil carbon potential?*

## Soil carbon results from a Mitchell grass paddock on the Barkly

In July 2013, the DPIF sampled soil carbon at three bores in East Ranken paddock. The three bores differ in age – the first one was established in 1910, the second one was first used in 2005 and the third one was first used in 2010.

The paddock is 700 km<sup>2</sup>, well watered and contains Mitchell grass pastures (Barkly land system) in fair to good land condition. We collected soils at different distances from each bore (less than 500 m, 1.4-1.5 km and >3 km) and also sampled the ungrazed turkey's nest enclosures at two of the bores to answer the following questions:

- What soil carbon levels are typical on black soil plains in the Barkly region?
- Do soil carbon levels vary depending on the age of the bore?
- Do soil carbon levels vary depending on grazing intensity (distance from water)?
- Is there potential for improving soil carbon levels using grazing management?

*Curious onlooker watching the soil sampling.*

*Photo: Dionne Walsh*



Australian Government



Queensland Government

## Project Partners

The Climate Clever Beef project is supported by funding from DPIF and the Australian Government until May 2015.

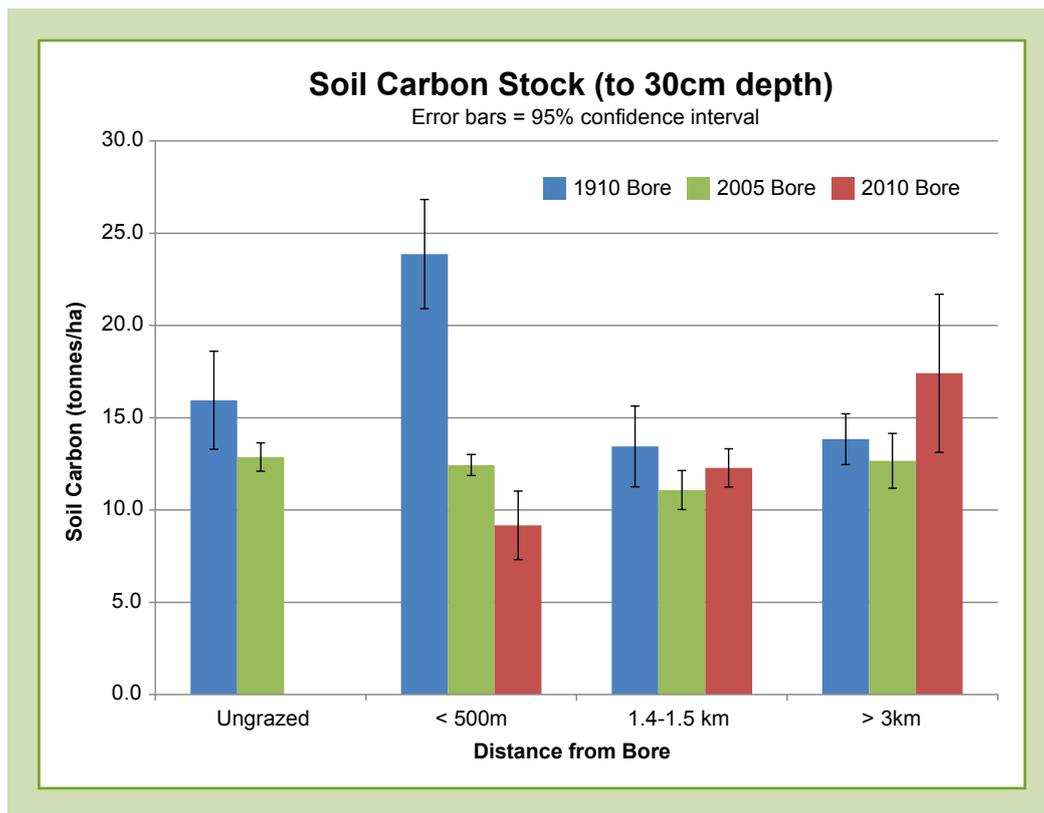


## Findings

- Soil organic carbon was found to be relatively low in these black soils (typically <math><0.5\%</math>).
- Soil organic carbon was highest in the top 10 cm of soil and declined with depth.
- Average carbon stocks were typically between 9-17 tonnes per hectare in the top 30 cm of soil.
- CSIRO estimates that across Australia, the amount of organic carbon in the top 30 cm of soil ranges between <math><5</math> and <math>>200</math> t/ha\*.

The graph below shows:

- There was no consistent relationship between soil carbon stock and age of bore.
- There was no consistent relationship between soil carbon stock and distance from water.
- The highest levels of soil carbon (~24 t/ha) were found at 100 m from the oldest bore, probably due to the accumulation of dung, disturbance and high turnover of annual plants”.
- Soils from the ungrazed turkey’s nests did not have significantly more carbon than the grazed areas, suggesting that up to 100 years of grazing has had no discernable negative impact on soil carbon levels in this paddock.



These findings are similar to those from other black soil locations across the Barkly#. If typical, the results from East Ranken suggest that the potential for increasing soil carbon and generating carbon credits via the management of land condition will be low on black soils on the Barkly.

\*<http://www.csiro.au/Organisation-Structure/Flagships/Sustainable-Agriculture-Flagship/Australian-Soil-Carbon-Map.aspx>  
#NT Department of Land Resource Management, unpublished data

## For more information

Contact the Pastoral Production team at Tennant Creek on 8962 4493 or Berrimah Farm on 8999 2011.