

This came across my desk late so only a brief comment.

While I'm ambivalent on the prospects of growing cotton on the Barkly this is concerning simply for the complete absence of any scientific rigor to underpin the soil carbon sequestration rate which underpins the neutral claim of the landscape conversion.

Despite all evidence from scientific literature pointing in the opposite direction including, (i.e. land conversion to cropping from pastures loses soil C - see Bristow et al 2016) the claim that the conversion of Mitchell grass to cotton will not only sequester soil carbon but enough to offset a 30% increase in beef herd is unjustified. While this claim itself goes against most scientific studies on this subject, as far as we can tell the data they used to 'model' this prediction is highly flawed and based on a linear regression between 2 points, a baseline sampling of 2 cores in 2019, and resampling again (5 cores) in 2021. From this they calculated a weighted average and upscaled the change over the next 3 years.

From the data they present (its a bit hard to decipher which data is which) below you can see that while the average increases the error, which is very large, is not considered at all.

There is also ample evidence that cultivation of permanent pasture for cropping can release substantial amounts of N₂O that haven't been accounted for this study. Cotton soils in other regions of Australia are declining are actually declining in soil carbon (or require substantial levels of organic amendments which simply aren't available in this region) due to the intensive cultivation and low quality inputs.

We have worked extensively on a number of soil carbon and greenhouse gas projects across a number of industries including cotton in QLD and cropping in the NT are greatly concerned about the complete lack of rigor and lack of market confidence associated with such claims and the risk this poses to the entire soil carbon market before it even gets a chance.

Regards

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