FINAL REPORT – Executive Summary

For Public Release

Part 1 - Summary Details

CRDC ID: CSP 1403

Project Title: Improving cotton productivity with crop nutrition

Project Start Date: 1/7/2013 **Project Completion Date:** 30/6/2016

Research Program: 1 Farmers

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Signature of Research Provider Representative:

Date submitted: _____8 January 2021_____

Part 3 – Final Report

Contents

Part 4 – Final Report Executive Summary

Soil Organic Carbon

Incorporated stubble retained more than twice as much stubble-C compared with surface applied stubble. The N contained in surface-applied stubble was mostly recovered. With warm temperatures, the incorporated stubble promoted substantial biological N fixation, and indicated that up to 150 kg N/ha may be fixed where stubble is incorporated. Stubble applied to the soil surface reduced water loss. This helps explain the rates of C sequestration reported by Rochester (2011) in his field experiment where all stubble was incorporated.

Timing of Nitrogen

The timing of nitrogen trials (TON) provided clear information in regard to both the timing of nitrogen and varietal response to uptake and answered the question about splitting applications or when to apply N upfront. The TON trials showed that there was no statistical difference in splitting nitrogen application in regard to yield. In regard to splitting the applications or supplying N upfront from September to January, there was no statistical difference. It was therefore concluded that supplying N upfront prior to sowing provides the same yield compared to split or late upfront application dates. This is very reassuring information for the industry. The impact would be significant as there would be a reduction in labour and machinery cost (diesel) as well as NO emissions from over supplied N during splitting/fertigating during the season. The outcome of this research provides both an economical and environmental benefit.

Extension of the Research

Research outcomes have been communicated to industry via phone and email enquiries, Spotlight and Cotton grower magazine articles, technical advice given through the NUTRIpak webpage and NutriLOGIC decision support system and via the industry's extension networks. The 2014 cotton conference and subsequent Nitrogen management workshop provided the industry with up-to date reports and discussions on the best management practices for the cotton industry.

The final conclusion from the research was that long term high-yielding cotton crops can be produced without high N fertiliser inputs, or excessive water use.