

BIOSTIMULANT ENHANCED AMMONIA PROVIDES COST REDUCTIONS TO AGRICULTURE PRODUCTION

Interim Report:

October 2012 - Year 2 of 3

Crop:

Irrigated Cotton

Location:

“Brookglen”, St George. QLD. Australia.

Researcher:

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Benefactor:

EcoCatalysts Pty Ltd / Advanced Nutrients Pty Ltd

ABSTRACT:

The use of biostimulants for enhancing efficiency of fertilizers has a chequered history with many field demonstrations leaving economic validation wanting. Success of the innovation Black Urea® prompted further research into using carbon bio-catalysts for improving the production economics of irrigated agriculture in Queensland, Australia, where anhydrous ammonia is a common fertilizer used in flood irrigation systems.

Anhydrous ammonia is a toxic gas applied to soil under temperature controlled pressure. This has a deleterious impact to the soil organic matter and biota which facilitate fertilizer use efficiency. By mixing a modified humate base and bio-catalysts (EnhanceMax™) with anhydrous ammonia during its application, we can reduce the impact and stabilise the ammonia as ammonium complexed with organic matter and stored as heterotrophic protein.

This capture, control and store mechanism can reduce the environmental losses of fertilizer nitrogen and promote a more sustained availability of nitrogen to the rhizosphere. Current two year commercial scale demonstrations in irrigated cotton have produced equivalent yields to usual practice even when reducing application rates by 20%. This has reduced the cost of nitrogen per production unit (bales of cotton lint) by >15%.

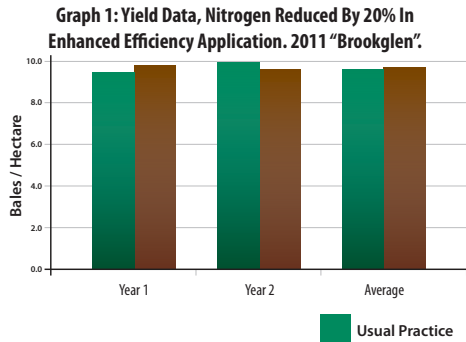
This improved nitrogen use efficiency not only improves the growers’ production economics, but improves global goals by directly impacting the reduction in carbon footprint due to fertilizer use.



RESULTS:

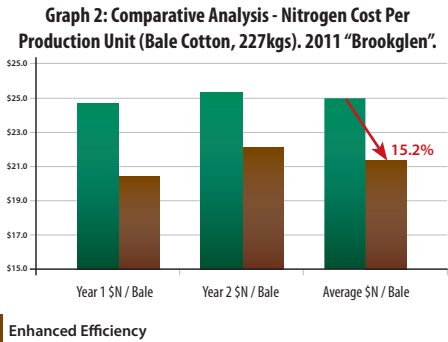
If we accept that the highest yield may not always be the most profitable crop, the pursuit of reducing input costs may result in a reduction in overall yield per hectare. This may reduce one input cost but the reduced scale may increase other costs. It is therefore desirable to maintain or increase yield whilst reducing the input costs of fertilizer.

Over the first two years of this demonstration, the resultant yield between a full application of 150kgsN/ha (Usual Practice) and the reduced 120kgsN/ha generated via the enhancement (Enhanced Efficiency), maintained yield with no significant difference (Graph 1).



Nitrogen carried an impost of A\$1.32/kgN over the study period. A simple economic analysis of the nitrogen related production costs, discovered the cost of nitrogen per bale (227kgs) of cotton lint, over the two years planting 2010 and 2011, averaged \$25.02 when applied as anhydrous ammonia (Usual Practice).

The biostimulant enhancement of the fertilizer (Enhanced Efficiency) allowed a reduction in nitrogen applied that reduced the cost of nitrogen per bale of cotton to A\$21.22 per bale (Graph 2).



CONCLUSION:

The focus of this study is on the commercial benefit if any of using biostimulants with conventional fertilizer to improve production economics through increased fertilizer use efficiency.

In the case of using the organic acid based biostimulant, EnhanceMax™, with Anhydrous Ammonia, BigN®, in irrigated cotton production, the answer is affirmative to an increase in economic benefit. The results of the study thus far, have yielded a reduction in nitrogen cost per unit of production of 15.2% with no loss of overall yield produced.



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