CottonInfo: Connecting growers with research

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Nitrogen: what's it really costing you?

The real cost of N.

Last year's CRDC Grower Practices Survey found **most irrigated growers spent between $300 and $600 per hectare on nutritional inputs**. Nutrition is also the largest cost line item ($591/ha) in the 2014 Boyce-CRDC Comparative Analysis, ahead of wages ($462/ha) and fuel and oil ($439/ha).

Within crop nutrition, **nitrogen (N) is the most significant cost** - and, in some cases, we're applying more N than recommended, despite the fact that **applying more N does not necessarily result in higher yields**.

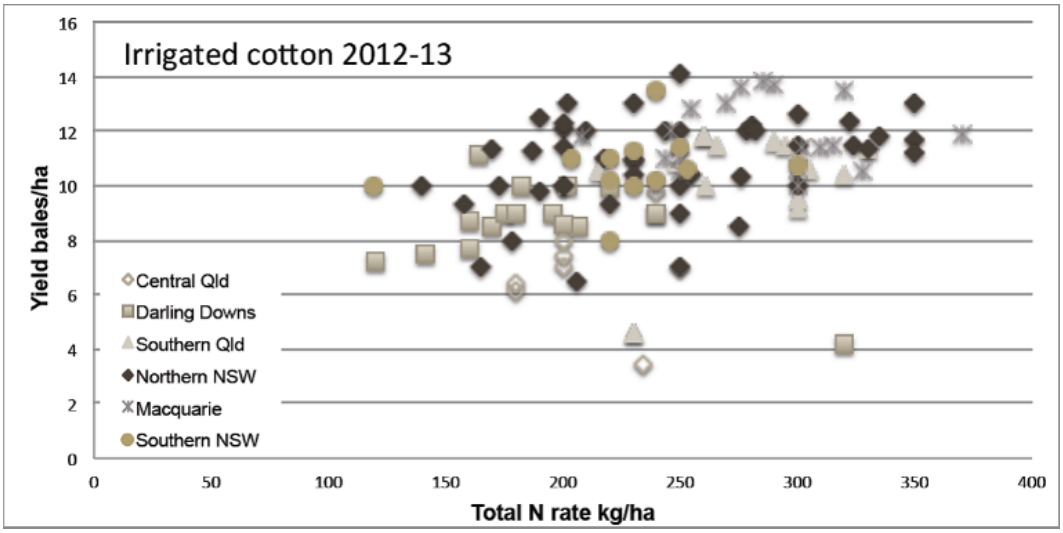
This highlights that we need to know what may be limiting our production: N or some other factor such as soil, climate, pests or disease that may be limiting N uptake or leading to excessive N losses from the system.

What do our trials show?

Last season, our team of CottonInfo RDOs conducted trials across all the cotton growing valleys looking at Nitrogen Fertiliser Use Efficiency (an industry-developed measure that indicates the efficiency of N use in the production of lint by dividing lint yield by N applied).

Our trials found that 24% of 147 irrigated sites achieved the optimum NFUE and **74% of sites were below the optimum NFUE**, meaning that a reduced amount of lint was produced for the amount of N applied. (You can read more about our trials in a paper we presented to the Cotton Conference, and in an

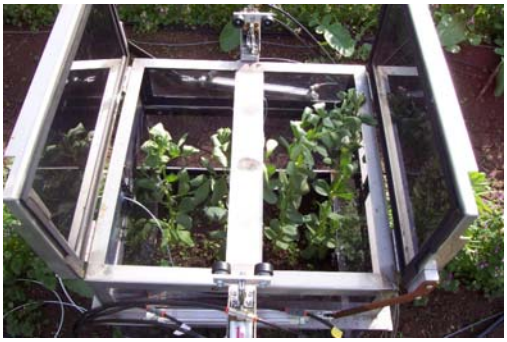
article from RDO Alice Devlin in the Australian Cottongrower).



What does the research say?

Experiments conducted at ACRI Narrabri have looked at the economic optimum N rate by assessing the crop's response to N at several rates between 0 and 320 kg N/ha (the economic optimum N rate is where $1 spent on N fertiliser returns $1 in lint). **The research found economic optimum N rates were 220 and 153 kg N/ha for cotton** following fallow or faba bean crops, with cotton yielding 14 and 12.8 bales/ha respectively at these rates.

For many growers, these amounts of N might seem too low, but an important thing to remember is that the ACRI soil is able to supply enough N to yield about 8.5 bales/ha in the fallow, and 11.5 to 12 bales/ha with the legumes. So, if you were to do a budget with the higher rates of N that tend to be applied by growers in other areas, but with lower mineralisation found in other soils, then the total N supplied to the crop may well be around the same amount.



So, what can you do?

The best way to determine exactly how much N your crop needs is to follow these steps:

- Undertake **soil testing** pre-season to assess N levels and fertiliser requirements.
- Calculate the **expected crop nutrient requirements** (consider expected yield, crop history, crop system, nutrient losses, crop use efficiencies, plant nutrition recovery and uptake, soil condition and characteristics).
- Develop a **fertiliser plan** that suits your farming systems and minimises losses.
- Monitor crop through **petiole** and **leaf analysis** to determine if the crop has sufficient nutrient levels.
- Develop **a long term plan** to maintain or improve soil health.

For more, visit *my*BMP, read the Nutrient Efficiency chapter of the CottonInfo 2014 Cotton Production Manual, or contact your local CottonInfo regional development officer.