

# Gene Technology Patents

*'A Perspective From The Cotton Industry'*

*ACIPA – 8<sup>th</sup> September 2010*

*Stephen Ainsworth  
General Manager  
Cotton Seed Distributors Limited.  
Wee Waa. NSW.*

# My Presentation

- A brief tour of Australian cotton
- The role of CSD
- The road to biotech cotton
- Technology licensing
- Experiences
- Q&A time



# The Story So Far...

- **Cotton is not a new crop to Australia**

- cotton seeds were brought to Australia with the First Fleet.
- cotton is a perennial plant, cultivated as an annual crop.
- A series of crops were grown in a range of locations in Qld and NSW dating back to the late 1800's.
- the modern industry was pioneered in 1963 @ Wee Waa.
- the industry rapidly developed in the 1970's / 80's and has since largely consolidated its development & production.

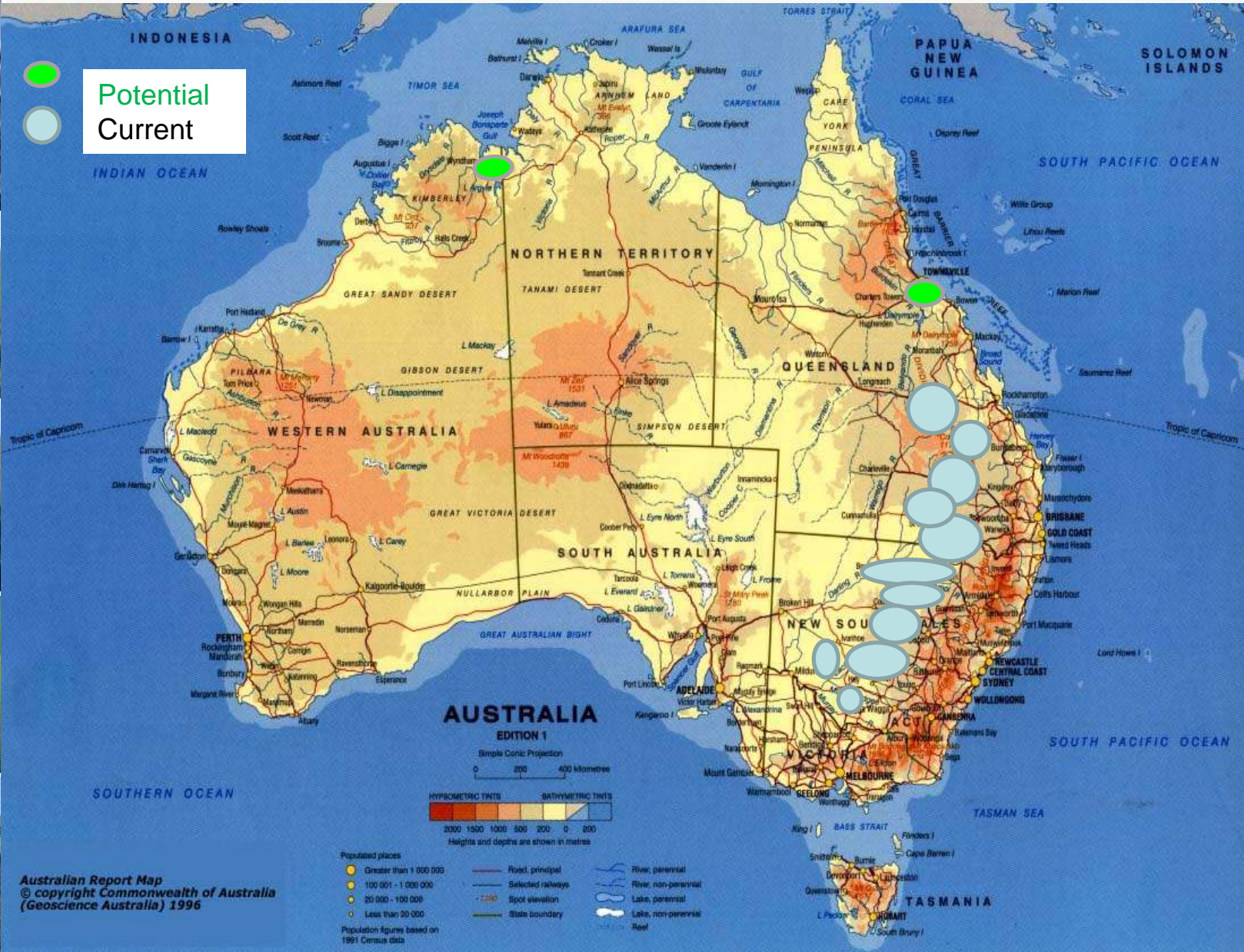


# The Story So Far...

- **Cotton is grown by mainly family farmers in inland NSW and Qld.**
  - ~1000 farmers grow dryland (rainfed) and irrigated cotton.
  - planted in spring : harvested in autumn
  - cotton is grown in rotation with a range of other crops.
  - average area cultivated is about 400ha per grower.



# Production Areas

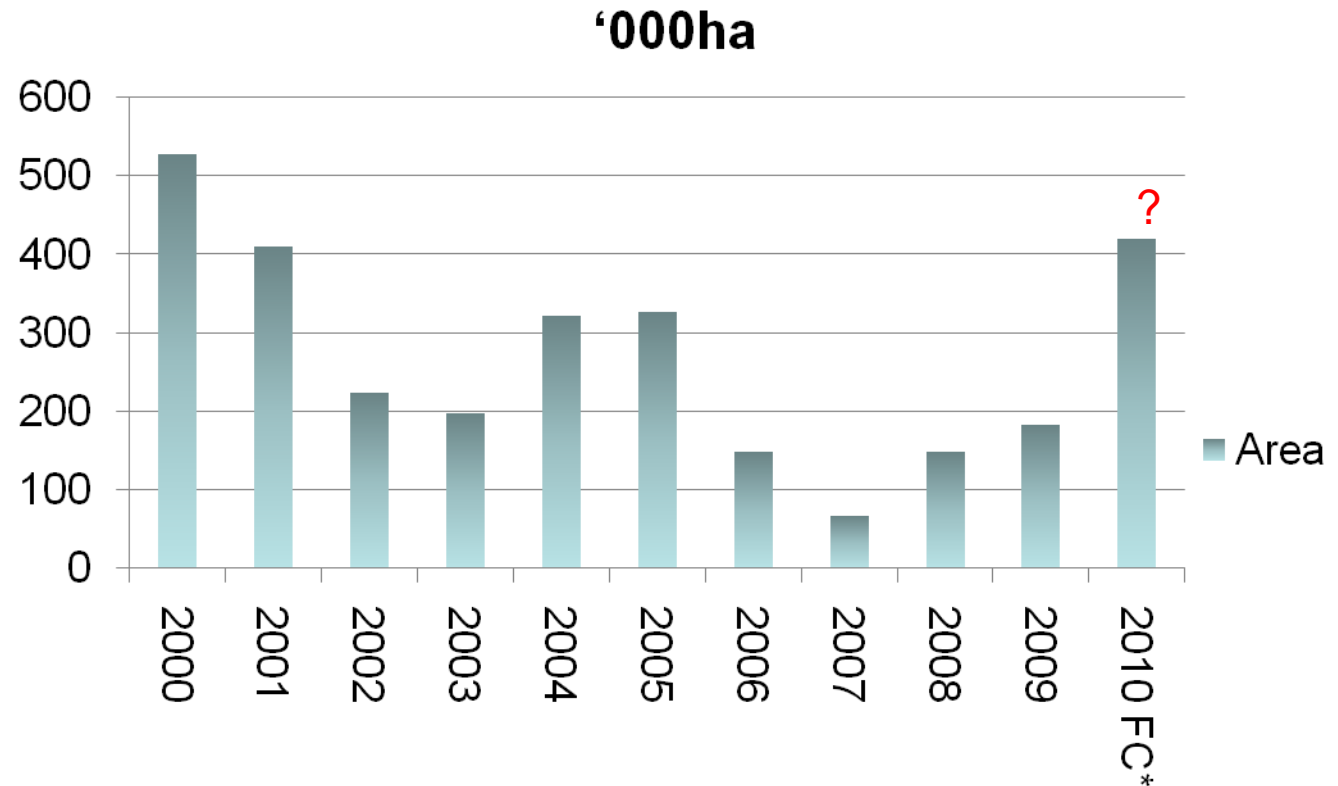


# Some Basic Facts

- Peak annual production of 3.4M (227kg) bales:
  - Mean lint yield of 1935kgs per ha
  - Highest yields globally (2.7 times world average)
  - High quality fibre
  - Trades at a premium in the world market
- Over 96% of production is exported to mainly SE Asian customers.
- Australian cotton contributes about \$1.2billion to exports annually.
- Employment footprint of >10,000 jobs in rural and regional Australia.

# 10 Years of Crop History

Source: ABARE, CSD data



Key Drivers: relative returns / exchange rate  
seasonal conditions  
crop rotations

# Industry Characteristics

*'A highly organised, professional, cohesive & resilient industry'*

- Cotton is highly responsive to management.
- Professional industry participants at all levels.
- Strong integrated research base
  - Cotton Communities CRC
  - CSIRO : (Plant Industry, Entomology, Textile & Fibre Technology etc)
  - CSD
  - Cotton R&D Corporation
  - Government agency support
  - Private sector R&D investment
  - Others...
- Significant industry extension base
- Well functioning feedback mechanisms

# Cotton Seed Distributors



- CSD was founded in 1967 and is an Australian grower owned and controlled company, limited by guarantee and based in Wee Waa, NSW.
- CSD works in partnership with the CSIRO cotton breeding team to develop, produce and market cotton varieties for domestic & international markets.
- Our mission is to provide growers locally adapted, high performance cotton varieties which maximize their gross returns by meeting the needs of the customers of Australian cotton.
- Our focus is to deliver growers and our industry leading varieties focused on market needs:
  - Lint Yield
  - Fibre Quality
  - Disease tolerance
  - Regional adaptation
  - Biotechnology options



# Commercial Arrangements

CSD holds an exclusive licence from CSIRO to commercialize cotton germplasm globally.



CSD and CSIRO are joint venture partners in Cotton Breeding Australia. Key activities include breeding, research & development .

CSD also holds licences to develop and commercialise biotechnology traits in CSIRO varieties with:





# The Road to Biotech

- A major industry driver for the introduction of cotton biotech was the loss of efficacy and the environmental issues related to the use of pesticides applied to control the major pests of cotton. (*H. armigera* and *H. punctigera*)
  - Causes significant economic / production losses
  - Environmental concerns surrounding intensive chemical use
  - Sustainability & pesticide resistance issues
- The emerging science of transgenic cotton (bt cotton specifically) provided an opportunity for industry collaboration to understand and develop the technology for application within Australia.
- This was quite unique in that the owners of the technology established relationships with the cotton industry, collaboratively developed the technology and the industry developed a framework to be actively involved in its ongoing stewardship.
- The road was not always smooth, more on this later.....



# So, Where Are We Now ?

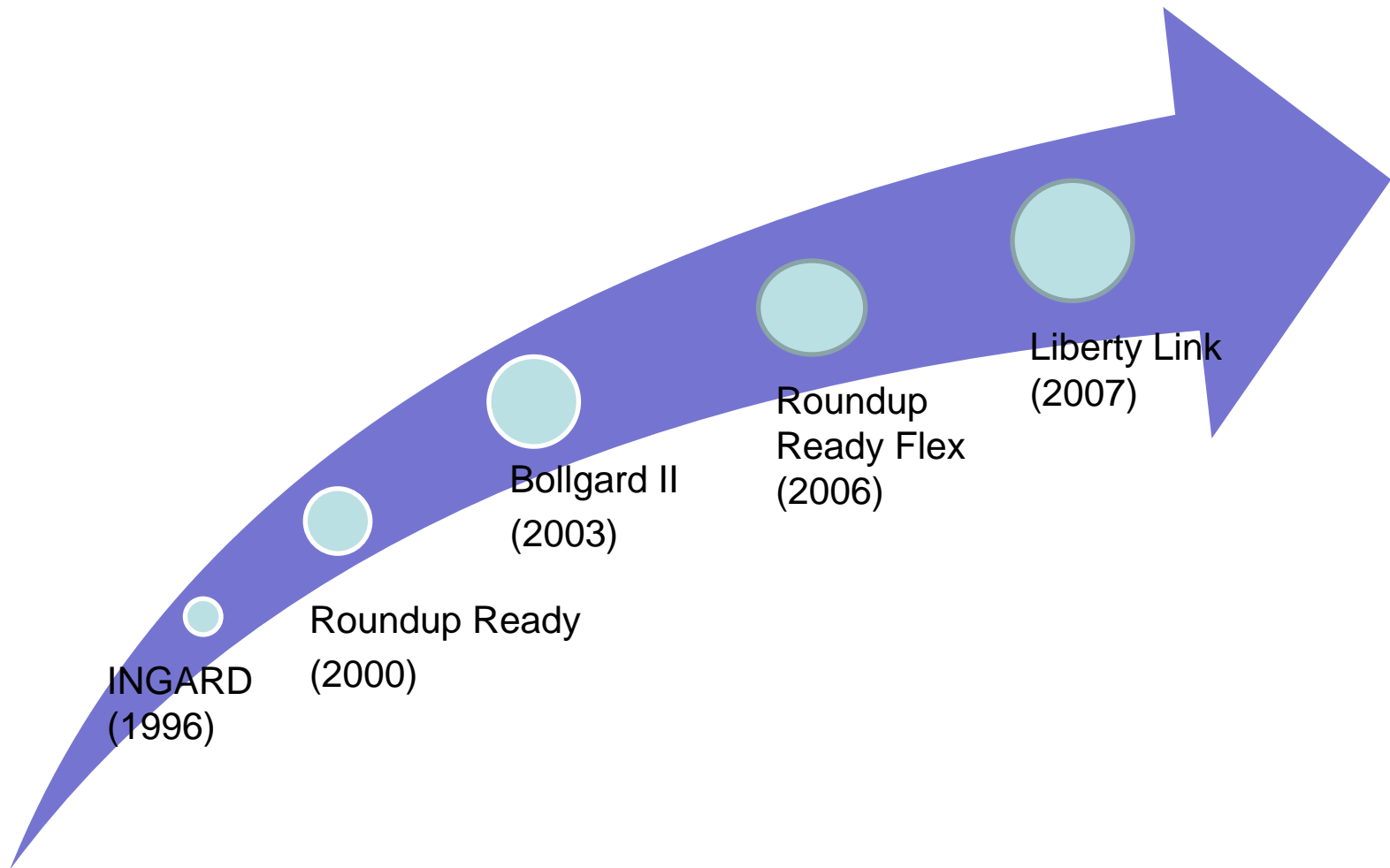
14 years on, the introduction of biotech cotton in Australia has been a remarkable success story:

- Significant & sustained reductions in pesticide use
  - 80% reduction in pesticide use
  - Reduced OH&S issues
- Improvements in environmental performance
  - On farm, catchment wide, industry wide
- Successful implementation of IPM systems
- Improved & more sustainable production systems
- Improved yields

Cotton has become a much easier crop to grow

[www.cottonaustralia.com.au/environment/biotechnology/](http://www.cottonaustralia.com.au/environment/biotechnology/)

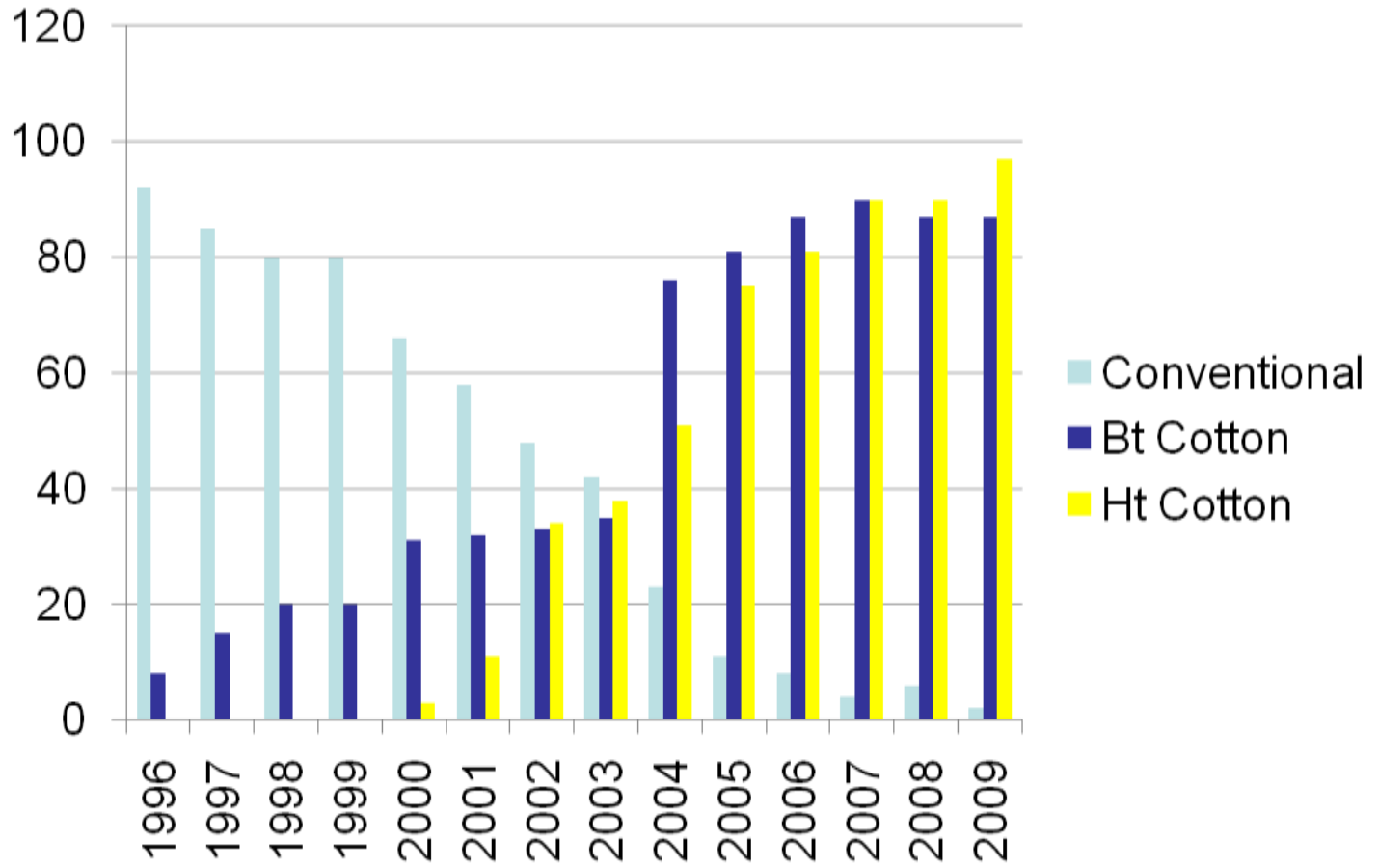
# Commercialized Traits



# Biotech Adoption in Cotton

Absolute Trait %

Source: CSD Data



# Technology Licensing

- Australia employs a robust (multi-agency) regulatory system which manages the deployment of gene technology per se.
- Conditions governing the approval and ongoing management of the technology are important .  
The stewardship of the technology is a critical component.
- In the case of cotton, a industry based stakeholder group (TIMS) was established and is empowered to consider and recommend stewardship plans pertinent to individual traits on an ongoing basis.



# Technology Access

Following regulatory approval there are essentially two types of access operating in Australia with regard to biotech cotton:

1. Seed Company Licenses
2. Grower Licenses



## Seed Companies Licensing

- To breed, evaluate, multiply and supply varieties to licensed growers.
- 3rd party licensing is very important
- Licenses granted in respect of patent rights in certain jurisdictions.
- Includes regulatory, operational & commercial consideration.
- Must have quality 'freedom to operate' provisions.



# Grower Licensing

Regulatory obligations (incl. trait stewardship) are captured in Technology User Agreements (TUA) between growers and technology owners.

- Annual agreement (TUA) operates in cotton
  - Seasonal audit provisions
    - Planting Audit
    - Mid Season
    - End of Season
  - Random auditing process (RMP compliance)
  - Regulatory compliance reporting
- Agreements executed & serviced by local rural retailers.

- Key components:
  - Annual agreement.
  - Accreditation process required for technology users.
  - Single crop license.
    - Independent of variety purchase
  - Includes commercial terms & considerations.
  - Privacy provisions.
  - Stewardship & Resistance Management Plans incorporated.
  - Ability to sell cotton lint and fuzzy seed for normal commercial purposes.

# Experiences

- Generally, there has been limited issues with the application of the TUA in cotton.
  - Was treated with caution when new.....
  - Consultation with industry was important
  - Professional industry base certainly helps
  - Growers new to cotton technology have taken technology licensing in their stride.
- Respect for the I.P embodied in the TUA has been good but not perfect....
  - eg; rare cases of alleged fraud with prosecution.  
rare cases of denial of future access.
- R.M.P compliance tends to be main area of concern.
  - Practical compliance with bt cotton RMP's from time to time.
  - Processes to manage and mitigate risks enforced.



# Comments / Concerns

- \$A trait pricing
  - price to value models
  - country / country comparisons
  - vs alternate systems
  - alternate technology providers
- Flexible grower options programs have been well received
  - risk sharing
  - End point royalty (yield related programs)
- Stewardship
  - RMP components
  - Practicality / effectiveness of some components

# Summary

- **The technology is very valuable and important to the cotton industry.**
- **Provides useful solutions to address current and future sustainability challenges.**
  - However, it is not a silver bullet....
- **Industry collaboration and a rigorous scientific assessment of any potential technology is critical.**

# Thank You

Stephen Ainsworth  
General Manager  
Cotton Seed Distributors Limited.  
'Shenstone'  
Wee Waa. NSW. 2388.  
E: [sainsworth@csd.net.au](mailto:sainsworth@csd.net.au)  
T: +61 2 67950000