Assuring Cotton Quality from Field to Mill -
The Importance of an Integrated Approach

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**Background**

- Only Upland Cotton
- Exports 100% of cotton crop
- Makes up 10% of the medium to high grade cotton
- Highest Yielding 2204 kg/ha (10 bales)
- Least contaminated cotton (ITMF 2016)
- 100% mechanically harvested
- 40 modern, large & highly productive saw type gins
- 5 Classing facilities with 17 x Uster® Technologies HVI™ 1000 instruments

*Cost of cotton production is one of the highest in the world*

*If Australia is to maintain its reputation as a consistent supplier of high-quality cotton it will need to ensure that the entire cotton pipeline from growing to ginning and from warehouse to port conforms to industry Best Management Practices (BMP).*

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Outline

Post Harvest industry Best Management Practices (BMP).
- Harvesting
- Ginning
- Classing
- Storage and Handling

Conclusion
BMP for Harvesting

- First draft drawn up in 2012, last version (version 6.0) dated March 2014.
BMP for Storage and Handling

- First draft drawn up in 2009, last version (version 2.0) dated March 2012.
BMP for Ginning

- First draft drawn up in 2006, reviewed annually prior to the start of ginning season - latest version (version 16.0) dated February 2019.
- Critical Areas:
  - Certification and Calibration of all Moisture Measuring Equipment
  - Certification and Calibration of Weighbridge, Bale Scales and Test Weights
  - Fire Bales
  - Sample Size
  - Training
  - Contamination
  - Bale size
  - Safety
  - Classing
  - Auditing
Fire Bales

- Documented Fire Bale Procedure.
- Receivers must be notified of bales that are suspected to be ‘fire’ bales.
- Minimum requirement is removing two bales before and two bales after the suspected bale.
- Bales must be segregated for a minimum of 14 days before release.
- Fire bales must be identified with red tags which are left on the bales when leaving the gin.
- Fire bales should be stored in a demarcated area and accessible by a fire hydrant or hose.
- Bales must be further segregated at the receiving warehouse.
Moisture Measurement

- Conducted at module, gin stand and bale
- Several methods
  - Instrumentation
  - Handheld
  - In line
- Irrespective of which method all must be calibrated and certified on an annual basis
- Records
  - Calibration
  - Heating and Drying
- Bale moisture must not > 7.5%
Weight Measurement

- Weigh bridges must be certified annually by the appropriate State Authority or State-approved service provider.
- Bale scales must be calibrated and certified annually by a qualified service provider.
- Bale scales are verified at least once per shift with certified check weights.
- Certified Bale weights require independent verification or certification every two years.
- Records
Sampling

-A single sample from each side of the bale
-Samples must have the following minimum dimensions:
  Face  120 mm x 220 mm
  Height  140 mm
  Weight  200 grams
-Samples must not have holes from bolts in the press.
-Each sample requires an identification tag.
-Sample rolls must meet the following requirements:
  Plastic Type Must be Virgin no Remill
  Length 800 - 900 mm
  Diameter 400 - 500 mm
  Weight maximum of 13 kg
  Capacity maximum of 60 samples; unless end of run
BMP for Classing

- First draft drawn up in 2004, reviewed annually prior to the ginning season - latest version (version 21.0) dated February 2019.
- Critical Areas:
  - Sampling Condition
  - Classing Facility
  - Calibration
  - Check Test Programs
  - Auditing
Conditioning

- All facilities maintain standard temperature and relative humidity conditions of 21 °C +/- 1 °C and 65% +/- 2% as per ASTM D-1776.
- Conditions monitored by independent sensors
- All samples are passively conditioned for ≥18 hours.
- Conditioned from the dry side with the moisture content averaging between 5 - 6 %
- Records
Classing Facility

- Walls must be light grey, using the recommended paint colour from Dulux “Ghost Gum”.
- Rows of lights must be installed to provide ≤ 860 lux of illumination at the working surface of the classing table.
- Black Table surfaces
- Universal Upland Grade Standards for white (21, 31, 41 & 51) must be current.
- All other Upland standards (including light spotted, spotted & tinged) are at the discretion of each classing facility.
Calibration

- Annual Qualification of all instruments prior to season
  ➢ 8x8 Evaluation Cotton as per ASTM D7410

- Calibration
  ➢ USDA Universal Upland Short/Weak Calibration Cotton
  ➢ Upland Long/Strong
  ➢ Micronaire Low/High
  ➢ Colour/Trash Tiles

- Calibration Check/Verification
  ➢ Upland Long/Strong
  ➢ Central Tile
  ➢ Trash Tile

- Frequency

- Tolerances
Check Test Program CCAA

- Classing members must participate in the CCAA Check Test program.
- Samples from an actual bale are forwarded on a fortnightly basis during the ginning season.
- Samples are both objectively and visually classed
- Results forwarded to independent for analysis and report
- Reproducibility (% of results within tolerance) ≥ 80% 👍 ≥ 90% 😎

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UHML= 0.020 inches, Ul= 1.0%, Micronaire= 0.10 units, Strength= 1.5 grams per tex, Rd= 1.0 units, +b= 0.5 units
CSITC Round Trials

- CCAA members must participate in the second and third RT with participation in the first and fourth RT optional.
- Australia is the only country that collects the results of all its instruments for analysis as an industry.
Auditing

- All members will be audited annually, during the ginning season, to determine their compliance to the latest version of the BMP Handbook for Classing and Ginning.
- Classing audits are unscheduled
- Ginning audits are scheduled, and the gin must be operational during the audit.
- Several sections in the BMP are critical and are highlighted in the BMP Handbook. Classing facility and Gin must comply with all critical issues to be certified.
- Classing facilities and Gins that comply will be recommended for certification by Cotton Australia
ICA/Bremen International Certification

- To establish several laboratories located worldwide which meet a standard level of quality assurance, so that they can be used to resolve quality disputes and provide a service to the cotton industry.
- There are currently 12 laboratories certified worldwide.
- Three are from Australia, with a fourth considering certification.
- Auditor from Australia assisted in auditing 6 of the laboratories.
Conclusion

If Australia is to maintain its reputation as a consistent supplier of high-quality cotton it will need to ensure that the entire cotton pipeline from growing to ginning and from warehouse to port conforms to industry Best Management Practices (BMP).
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- Cotton Classing Association of Australia
Thank you

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