



Queensland Cocoa Industry Development Association Inc



DAINTREE
ESTATES

AUSTRALIAN COCOA

Supply Chain Innovation in the Australian Cocoa Industry

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Background

- ❧ Daintree Cocoa Pty Ltd (DCPL) was formed in 2010, but its origins started as far back as 2002, when The North Australian Cocoa Development Alliance (NACDA) was formed.
- ❧ NACDA was a consortium of Australian State Government Departments of Agriculture, backed by the Rural Industries Research & Development Corporation (RIRDC), Cadbury Schweppes Australia and Cadbury Ltd, UK. NACDA was formed to investigate the feasibility of cocoa growing in Australia
- ❧ A number of RIRDC reports were published between 2009 and 2013 outlining the research studies undertaken and the feasibility of developing an Australian Cocoa Industry

Background

- ❧ The study included cocoa growing trials in three northern Australian growing regions as well as investigating opportunities for mechanisation of pod processing.
- ❧ The performance of cocoa was best at northern Queensland sites where acceptable yields and quality were achieved.
- ❧ A fledgling cocoa industry has now developed in northern Queensland with about 30 ha of plantings established with a number of these plantations now producing pods and chocolate. Another 30 ha are planned during 2016-17.
- ❧ DCPL, under its **Daintree Estates** brand of Australian Origin Chocolates is the major player in the commercialisation of these earlier findings.
- ❧ DCPL is a unique “Plantation to Plate” cocoa growing and processing business.

Key issues facing the Australian cocoa industry

- ❖ Labour costs across the supply chain are extremely high compared to other cocoa growing/processing countries
- ❖ A different business model and a total focus on innovation has therefore evolved
- ❖ Chocolate products are premium priced but not different to Origin Chocolates from most other Origin regions globally
- ❖ Innovation and processing cost reduction across the entire Supply Chain is a must for viability.



What action and progress has been achieved

- ☛ Driving pod yield per hectare towards the 30 tons which were achieved in the earlier R&D studies has progressed slowly but is now improving annually.

HOW ?

- ☛ Encouraging growers to fertilise, irrigate and prune regularly
- ☛ Studying, (with James Cook University, Cairns, the prevalence of pollination vectors and ways of increasing their numbers.....use of pod husks etc
- ☛ Investigation to utilise the latest precision fertigation and irrigation systems available



Improving the genetic base of our planting material

- ❖ Most planting material are SG2 hybrids sourced from PNG. Also some seeds sourced from other SE Asian countries.
- ❖ From these early plantings a number of high performing trees have been selected for vegetative propagation and subsequent monitoring for phenotypic properties.....work in progress
- ❖ Plans in place to source a range of different bud wood from University of Reading and other cocoa germplasm sources to graft and propagate.
- ❖ Investigating collaboration with a tissue culture facility, Clonal Solutions Pty Ltd in North Queensland.



Value adding to processing waste streams

- ❧ Utilisation of waste streams across the entire supply chain focussing on bioactive nutraceuticals and antioxidants
- ❧ Cocoa leaf and pruning waste
- ❧ Utilisation of dry cocoa pod husks
- ❧ Use of fermentation juice and sweatings
- ❧ Cocoa bean shell as a high fibre powder and as a “brewing cocoa tea”.



Fermentation Innovation and Modernisation

- ❧ Semi-automation and material handling.
- ❧ Temperature controlled ferments with computer controlled mixing and data collection and monitoring.
- ❧ Collection of initial pulp and sweating for value adding.
- ❧ Reducing pulp juice by centrifugation and pressing.
- ❧ Addition of selected microbial strains, enzymes and other bioactive plant extracts to ferments.
- ❧ Delivering process consistency , unique bean flavours, reducing costs and differentiation final chocolate products



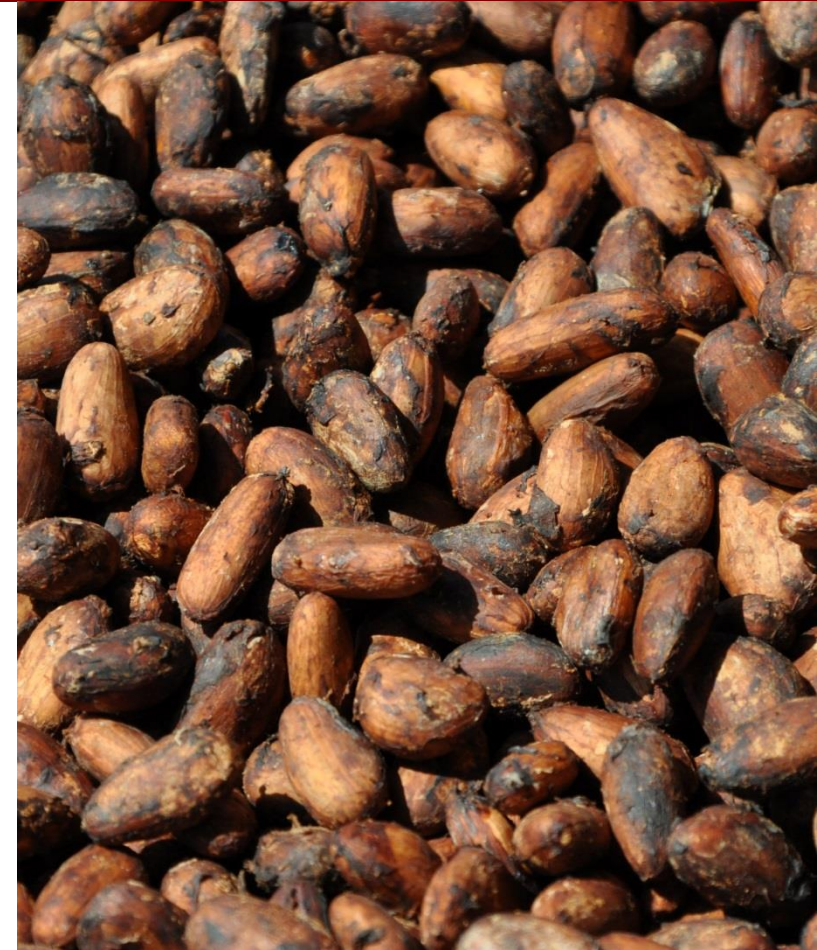
Pod Splitting and Beyond

- ❧ A prototype semi-automated pod splitter has been developed that has high throughput and does not allow any fragments of pod husks to remain in the wet beans.
- ❧ Designed and fabricated by local Far North Queensland engineering firm. Patent protected.
- ❧ Inventors: Hans Binder & Laurence Mamara, the latter a DCPL Grower and Director.
- ❧ DCPL undertaking fermentation trials from pod splitter produced wet beans followed by drying and assessment of bean/chocolate flavour profiles.



Pod Splitting and Beyond

- ❧ Further medium scale processing equipment to suit “plantation/bean to plate “ operations to be commenced soon.
- ❧ Will include improvements to fermentation equipment, bean roasters, crackers and winnowers , wet bean /pulp separators, and cocoa butter presses.
- ❧ All improving efficiency and cost reduction throughout the entire supply chain.
- ❧ A challenge is still reducing costs in cocoa pod harvesting but we are working on it!



Product and Recipe Innovation

- ❧ To capitalise on the innovation necessary in post harvest and other steps in the process, DCPL prides itself on its innovative products in order to further differentiate it in the marketplace.

Some examples of these include :

- ❧ Signature 70% Dark & 45% Milk Origin chocolates
- ❧ Single Plantation Origin chocolates
- ❧ Oceania Origin Chocolates from Samoa, Fiji, Papua New Guinea, Solomon Islands and Vanuatu.
- ❧ Australian themed range containing locally ground Coffee Beans, Pink Lake Salt, Native Bush Mint and Lemon Myrtle.



Product and Recipe Innovation

- ❖ Cacao-T Brewsnatural and with added Australian Bush Herbs and Spices
- ❖ Australian Origin Truffles decorated in stylized Indigenous art
- ❖ Cocoa bean infused Australian Virgin Olive Oils
- ❖ Chocolate soaps and scrubs using ground cocoa bean shell.
- ❖ Wine Chocolates infused with Australian Red Wine in 4 varieties... Cabernet Sauvignon, Shiraz, Merlot and Pinot Noir.
- ❖ Foodservice 6g wrapped Napolitains - Dark & Milk
- ❖ Bulk 3g Couverture buttons for chefs - Dark & Milk



Daintree Estates.....Facing Challenges and Embracing Innovation !!!

- ❖ Without innovation, DCPL would not survive in the competitive marketplace we all face today.
- ❖ We have been operating now for 6 years, but with 9 years of intense horticultural and processing R&D as our platform.
- ❖ We will continue to tackle challenges throughout the entire supply chain and innovate as we have done in the past.
- ❖ Tackling such challenges while being cognisant of building our business in a World Heritage Region where the “rainforest meets the reef” is our prime goal for a sustainable future.



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