







Queensland University of Technology
Prabono Australia



BEYOND COMPLIANCE

*A Bayesian Network approach
to develop confidence and competence
in a Systems Approach
to Pest Risk Management*

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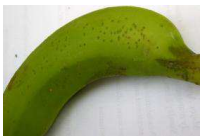





Standards and Trade Development Facility
Queensland University of Technology

CRICOS No. 00213J


The problem



Pest in exporting country





desire



Importing country is free of pest

- Requires pest risk mitigation (biosecurity) measures
 - Subject to international standards (ISPMs). Must be based on pest risk, scientifically justified, proportional to risk and least trade-restrictive
- Pest risk mitigation measures are usually single, e.g. pest area freedom or chemical treatment. These can:
 - Be difficult (or impossible) to achieve
 - Damage the commodity
 - Carry health and environmental risks
 - Halt the whole trade on a minor failure
 - Convey a power imbalance between trading partners





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The opportunity

- Integrated pest management can be more flexible and robust than single treatments
 - “Systems Approach” – ISPM No. 14
 - Two or more independent risk management measures
- Can be difficult to develop and negotiate due to uncertainty
 - What are the treatments?
 - How do they interact?
 - Where are the data?
 - We often feel we have some knowledge ...
- How to overcome this?
 - Persist with single treatments?
 - Don't trade until research is done?



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Model Development

- Open source “Toolbox”
 - Use Excel for Knowledge Management and Elicitation
 - Use GeNIe/SMILE for BN development
- Build and parameterise the model using expert judgement and data
- Clarify and accommodate uncertainty
- Collect data as the system is operated
- Update the BN model and review



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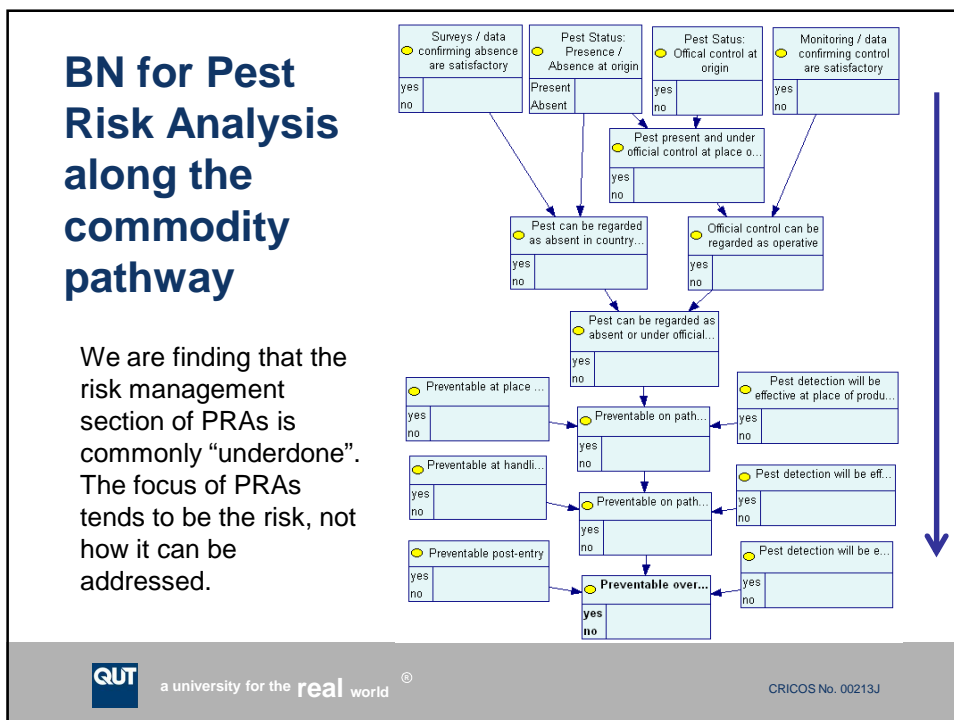
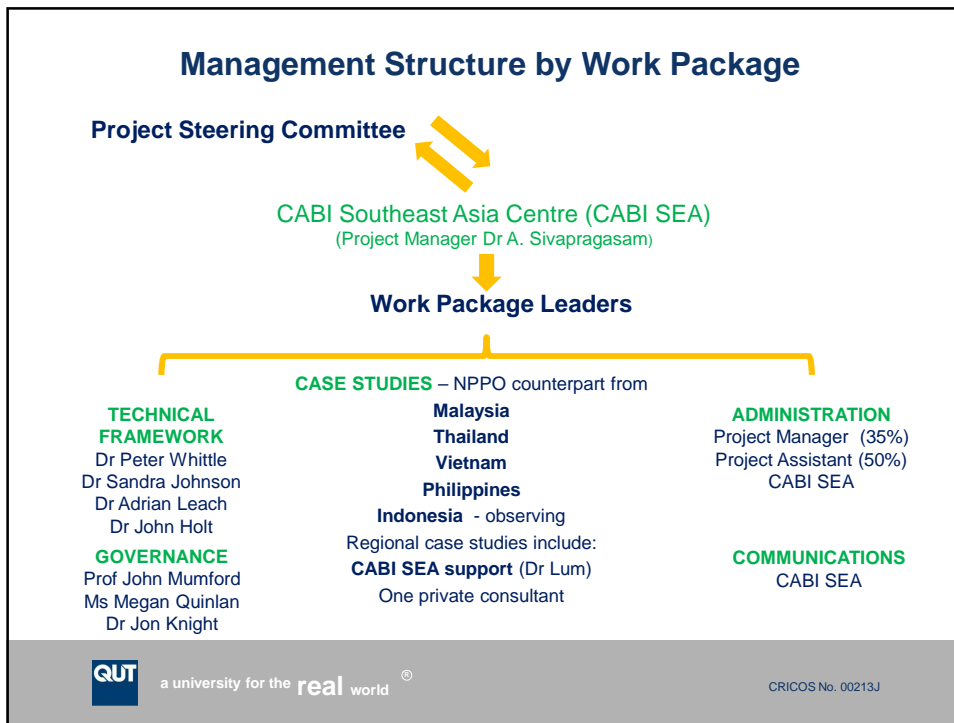
Collaborative project – QUT / ICL / JPM / STDF

- QUT and ICL developed plans through *PRATIQUE*
 - Apply BNs in a Control Point framework with case studies in developing countries in Southeast Asia, with aid funding
- The Standards and Trade Development Facility of the WTO (STDF) funded a project preparation grant to hold a workshop in Kuala Lumpur in August 2010
 - Five countries attended and all signed up with regional agreement on case studies
- Full proposal to STDF
 - Strongly supported
 - Funded for 2011/12 and 2012/13
 - Seeking supplementary funds
- Project launch August 2011



Case studies proposed during the PPG workshop

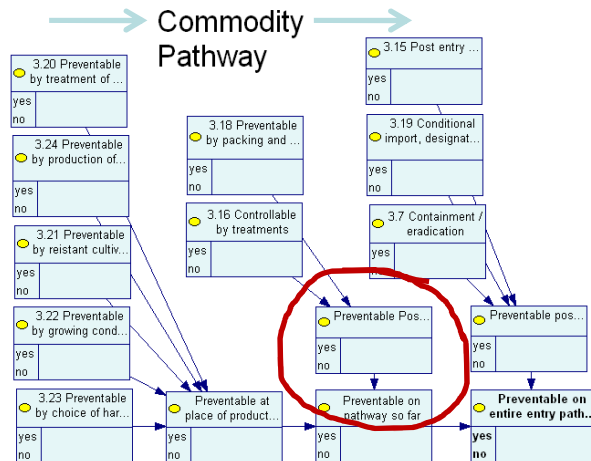
Commodity	Exporting country	Importing country
Fresh produce (not rubber plants) that may carry South American leaf blight of rubber	Countries with SALB	Regional
Oil palm planting material	Countries outside the region	Regional
Dragon fruit	Vietnam	South Korea, Taiwan
Jackfruit	Malaysia	China, Australia
Orchid cut flowers	Thailand	Europe
Mangosteen, avocado	Philippines	USA



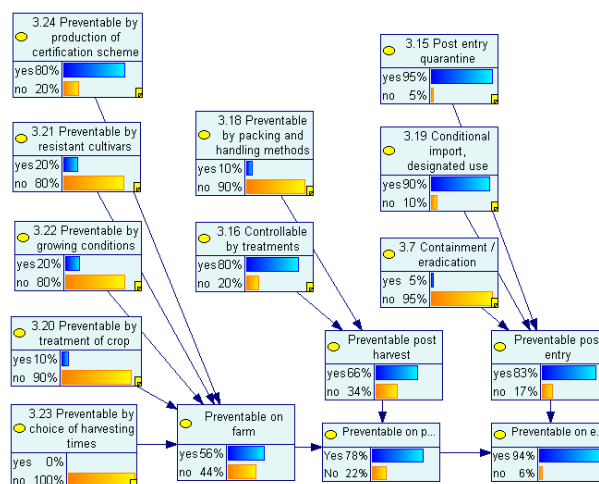
Restructured into a Control Point template - revised in each case study by group

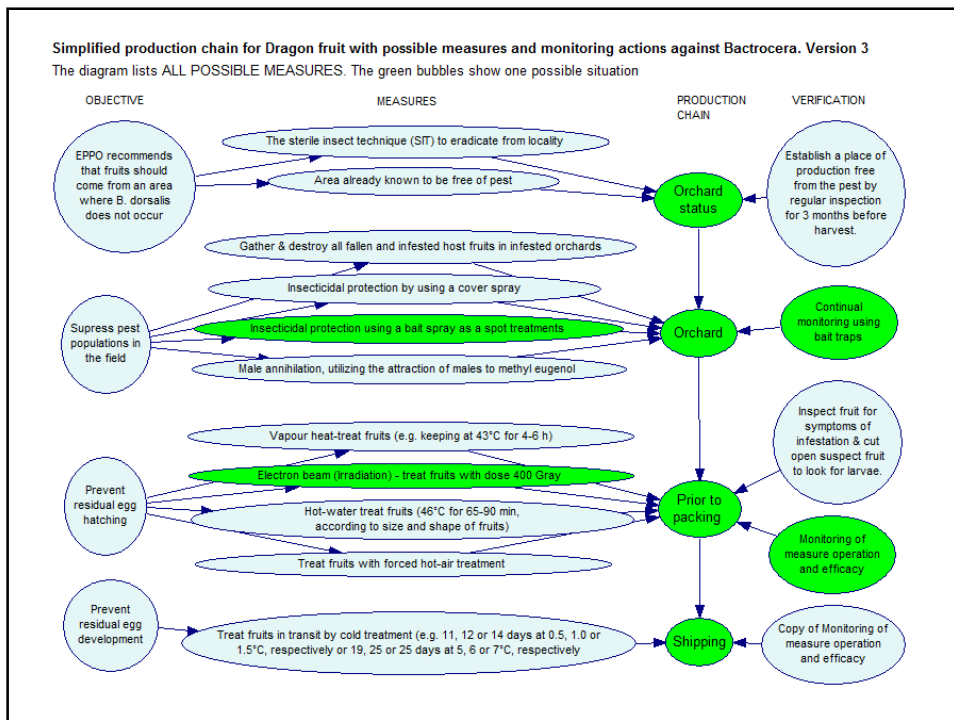
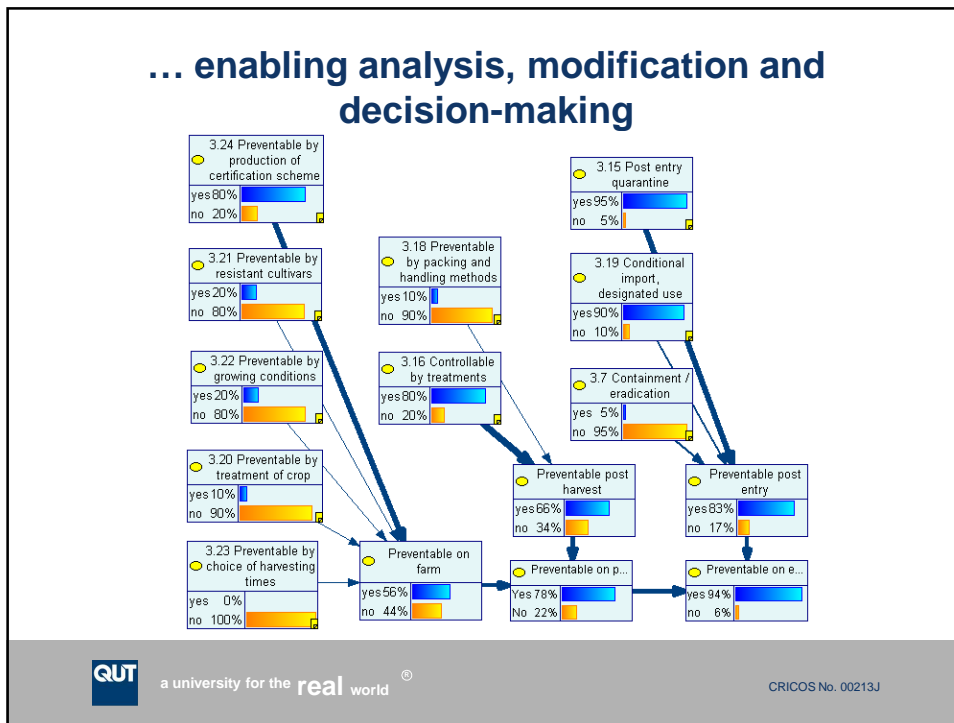
Building a BN of a host-pest-environment system can be complicated and potentially overwhelming.

The Control Point approach is focused on the key questions and makes the task more manageable.



Probability estimates are computed





Project outputs

- A review of pest risk management in Southeast Asian plant commodity trade
- A conceptual framework for Systems Approach decision-making, using Control Points and probabilistic or rule-based modelling
- Country and regional case studies utilising development approach and tools
- Establishment of a SE Asian competency base with the methods
- A plan for a harmonised framework for the region, which can be presented to the IPPC

Project outcomes

- More robust pest risk management in the region
- Better protection from exotic pest threats
- More confidence in trade negotiations
- New trade opportunities
- Greater inclusion of stakeholders in pest risk management planning
- Increased engagement in compliance
- A draft regional standard (RSPM) on systems approach

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