Science Based Biosecurity Risk Assessment

OECD Consumer Product Safety Risk Assessment Workshop

Dr Colin Grant
Professor Mark Burgman

24 April, 2012
Australia’s circumstances

- Island continent
- Favourable international pest and disease status
- Agriculture, fisheries and forestry (2011–12 estimates)
  - gross value of production $53.3 billion
  - ~70% of agricultural production is exported
  - value of agricultural exports $38.4 billion
- Effective biosecurity is a sound investment
Biosecurity threats

• FMD
• BSE
• Fire blight
• Citrus greening
• Karnal bunt
• UG99
Biosecurity philosophy

- Biosecurity continuum
  - pre-border
  - border
  - post-border

- Manage risk at appropriate part of continuum

- Partnerships

- Zero risk is unattainable and undesirable
Principles of risk assessment

• ALOP: ‘...providing a high level of sanitary and phytosanitary protection aimed at reducing risk to a very low level, but not to zero.’

• Transparent
• Flexible
• Science/evidence based
• Least trade restrictive
  • equivalence
  • end use (utility)

• Consistent with
  • WTO SPS Agreement
  • international standards IPPC/OIE/CODEX
International standards
WTO SPS Agreement is underpinned by 3 standard setting bodies - the Three Sisters:

• IPPC (1952)
  • 34 International Standards for Phytosanitary Measures

• OIE (1924)
  • terrestrial animal code & manual
  • aquatic animal code & manual

• Codex (1963)
  • many food standards, guidelines and codes of practice
Pest risk analysis
key knowledge on pests/diseases

- Pathway association
- If absent or present (officially controlled)
- Likelihood to:
  - enter
  - establish
  - spread
- Consequences
- Measures, if risk exceeds ALOP

- Mainly qualitative method

- Evidence connecting:
  - viable pest/disease
  - susceptible hosts
  - conducive environment
Daily work

- International obligations
- Stakeholder engagement
- Passenger, vessel, cargo and mail clearance
- Residue testing
- IRAs/policy reviews
- Technical policy advice
- Overseas market access
- Export certification
- Preparedness and emergency
- Capacity building
New assessments

- IMAAG
- Work plan
- IRA (standard/expanded) or policy review
- ICON (BICON)
- Public comment

Offshore

- Audit/verification
  - production systems
  - treatment facilities
  - surveillance
  - competent authority

- Export production
  - in-field conditions
  - accreditation / registration
  - Operational work plans

- Offshore treatment options

- Phytosanitary certification
On arrival

- Consignment integrity/documentation
- Visual inspection
- Disinfestation treatments
- Remedial actions (treat, re-export, destroy)
- Post-entry quarantine
Emergency preparedness and response

• Federal partnership
  • Intergovernmental Agreement on Biosecurity (IGAB)
  • National Biosecurity Committee (NBC)
  • National Management Group (NMG)

• Emergency deeds/agreements
  • Terrestrial animals (EADRA)
  • Aquatic Animals (EAADRA)
  • Plant Pest (EPPRD)
  • Deed categorisation - 100:0, 80:20, 50:50 government : industry cost sharing

• Emergency response plans
  • PLANTPLAN, AUSVETPLAN, AQUAVETPLAN
Biosecurity reform

- Risk-return
  - resources to areas of highest risk
  - shift from ‘quarantine’ to ‘biosecurity’
  - monitor, review, think, act

- Legislation - modernised, apt powers

- Shared responsibility
  - government
  - industry
  - community

- Science based, evidence led biosecurity
  - better tools, methods, systems and techniques
  - strategic surveillance, data mining, improved analysis, intelligence gathering
  - ACERA involvement
Governance

Problems are outlined by DAFF science and operations staff

- DAFF Steering Committee

Solutions are formulated and developed by both DAFF and ACERA staff, jointly

- ACERA Board

Independent scientific oversight

- Scientific Advisory Committee
- DAFF Technical and Policy Review
Flexibility

Room for

‘blue sky research’

and

‘specified projects’

\[ S(l, x) = T(l, x) - T_{\text{min}}(l) = \frac{x}{1-x} \left( \frac{x}{1-x} \right)^2 \]
Example 1: Inspection Systems for Risk Return

Inspection systems that:

• Intercept

• Learn

• Deter
Example 2: Biosecurity Intelligence: Social media

Gathering timely, critical information on emerging threats from ‘open’ sources

- Web search software
- Professional networks
- Internal networks
Example 3: Getting the best out of experts

• Structured question formats
  a) Overconfidence

• Structured group interactions
  a) Dominance effects
  b) Anchoring
  c) Framing
  d) Motivational bias

1. Realistically, what do you think the lowest plausible value is?
2. Realistically, what do you think the highest plausible value is?
3. Realistically, what is your best estimate?
4. How confident are you that the interval you created, from lowest to highest, could capture the true value? Enter a number between 50 and 100%.
Lessons for product safety: how to get the most out of research

- Common language and concepts
- Close cooperation
- Trust
- The right people
- The right governance systems
- Systems that use data and expert judgment
- Consistency and logic