Mango Agribusiness
Research Program

Session 9:
Market Entry & Biosecurity

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Information
Markets
Biosecurity
Quality

Griffith UNIVERSITY

ASIA PACIFIC MANGO NETWORK

Australian Government
Australian Centre for International Agricultural Research

Introduction

- Background
- Related projects ACIAR Indonesia Meeting technical requirements for market access.

Understanding

- What is Bio security
- How does it affect market access

Biosecurity

- **Is the need for country to protect its interest from an incursion of an exotic biological agent (pest, disease or weed.)**

Market entry

- Types of markets
- **Non Phytosanitary market**
  - No Phytosanitary certificate is required. Eg *Singapore, Hong Kong, Canada*
- **Phytosanitary market**
  - Example of Phytosanitary certificates Many importing countries require you to include proof of the pest-free status of the produce or other information about the product, such as treatment. You may have to supply additional documents to demonstrate this. Eg *Most EU countries, UAE*
- **Protocol market**
  - Treatment is required for entry. *Eg China, Australia, US*

Market Entry

- What is required?
- Compliance
  - Regulatory
  - Customer

Regulatory Compliance

Chemical

- Registered chemicals only
- MRL below limits

Phytosanitary requirements

- No live insects
- Disease level below 10%
- Protocol followed.

Labelling Requirements

What the Customer demands

- Compliance Accreditations Global Gap, Environmental Social
- Disease levels maximum
- Altered MRL’s
- Shelf Life Minimum 6-7 days post arrival SLI
- Colour & Flavour acceptable
- Price that meets their objective
- Continuity of supply
- External quality low blemish levels

Protocols

- What are protocols?
  - Set of procedures that will ensure the exported produce is free of a quarantinable pest or disease to the level of probit 9 (*99.9968%*)
- Negotiated through bilateral negotiations between the 2 countries
- Must be based on science.
- Mangoes
  - Fruit Fly
  - Weevil, Pulp and Seed
  - Disease Bacterial Black spot

Protocols Vapour Heat treatment

- In the process fruit enters at normal temperature and is treated with saturated water vapour of higher temperatures thereby greatly improving treatment efficiency, as condensation increases the surface area treated.

- 47 degrees celsius or above - 15 minutes; or
  46 degrees celsius or above - 20 minutes:

Protocols Hotwater Treatment

- Fruit are dipped into hot water measuring at least (46.1ºC) to increase the pulp (interior of the fruit) temperature, and the length of time in the water is determined by the cultivar type and size of the fruit. The hot water that is used in the treatment needs to include a chlorine sanitizer.

Protocols Irradiation

- Fruit is exposed to a radiation source usually gamma radiation, Dose rate to sterilize fruit fly is 150Gy however most countries require higher dose rates.

Protocols Fumigation

- Fumigation with methyl bromide in an approved fumigation chamber for two hours at one of the following rates and in accordance with the entry requirements of the destination.

Methyl Bromide (g/m³)	Flesh Temperature
32 g per cubic metre (m³)	21– 31.9°C
40 g per cubic metre (m³)	16 – 20.9°C
48 g per cubic metre (m³)	11 – 15.9°C
56 g per cubic metre (m³)	10 – 10.9°C

Protocols Systems approach

- Newer approach,
- It combines a series of management practices that will achieve Probit 9 level of control
- Example MAT, combined with Orchard hygiene practice, Hard Green Mango and CO_2 shipment

Issues

- Capacity of exporting country to undertake the necessary background research at a high enough standard.
- Each treatment is not without its problems
- **VHT** very expensive and can be damaging to fruit (Potentially shorten shelf life)
- **HWT** only suitable for some varieties and can damage fruit (Can shorten the Shelf life)
- **Irradiation**, Can cause fruit quality problems ripening and scalding
- **Fumigation**: Montreal protocol, Environmental issues, Can damage fruit.
- **Systems approach**: Not widely accepted as yet.

How this impacts on the other SRA areas.

- Many exporting countries using various protocols are finding it challenging to expand exports the reasoning is not clearly understood.
- Needs to be an understanding on commercial practicality of treatments
- Impact on fruit quality and shelf life in market
- Impact on cost of fruit
- Market acceptance of the fruit in cost, quality, shelf life

Operational protocol

- **Orchards**
  - **Pest and disease status, registration.**
- **Processing and Packaging**
  - **Packaging material and process surrounding packing, Specific labelling requirments**
- **Treatment Requirements and Inspection**
  - **Treatment VHT and inspections**
- **Phytosanitary Certification**
  - **Issuing of certification**
- **Port of Entry Inspection**
  - **CIQ, a branch of AQSIQ, shall conduct inspections and examine relevant certificates and markings as the mangoes for export to China arrive at the ports of entry in China.**
- **Acceptation or rejection of consignment.**

Pest concerns from Australia

Australia Reference: (DAWR, 2013)	Armoured scale (Aulacaspis sp.)
	Northern Territory fruit fly (Bactrocera aquilonis)
	Mango fruit fly (Bactrocera frauenfeldi)
	Jarvis' fruit fly (Bactrocera jarvisi)
	Lesser Queensland fruit fly (Bactrocera neohumeralis)
	Queensland fruit fly (Bactrocera tryoni)
	Mediterranean fruit fly (Ceratitis capitata)
	Leaf blight (Coniella castaneicola)
	Sorghum head caterpillar (Cryptoblabes adoceta)
	Stem end rot of mango (Cytosphaera mangiferae)
	Dothiorella rot (Dothiorella 'long)
	Mango dothiorella rot (Dothiorella mangiferae)
	Flour moths, dried fruit moths (Ephestia sp.)
	Light brown apple moth (Epiphyas postvittana)
	Orange fruit borer (Isotenes miserana)
	Tortricid moths, vine moths (Lobesia sp.)
	False mango scale (Phenacaspis dilatata)
	Stemphylium rot (Stemphylium vesicarium)
	Mango seed weevil (Sternochetus mangiferae)
	Bacterial black spot (Xanthomonas campestris pv. Mangiferaeindicae)

Pest concerns from Pakistan

Exporting Country	Quarantine Pest
Pakistan **Reference:** **(AQSIQ, 2013)**	Peach fruit fly (Bactrocera Zonata)
	Mango seed weevil (Sternochetus mangiferae)
	Mango pulp weevil (Stemochetus frigidus)
	Mango scale (Aulacas tubercularis)
	Armored scale (Parlatoria crypta)
	Croton mussel scale (Lepidosaphes tokionis)
	Guava fruit fly (Bactrocera correcta)
	Sooty mold (Capnodium ramosum)
	Fungal pathogen (Fusarium moniliforme var. Subglutinans)

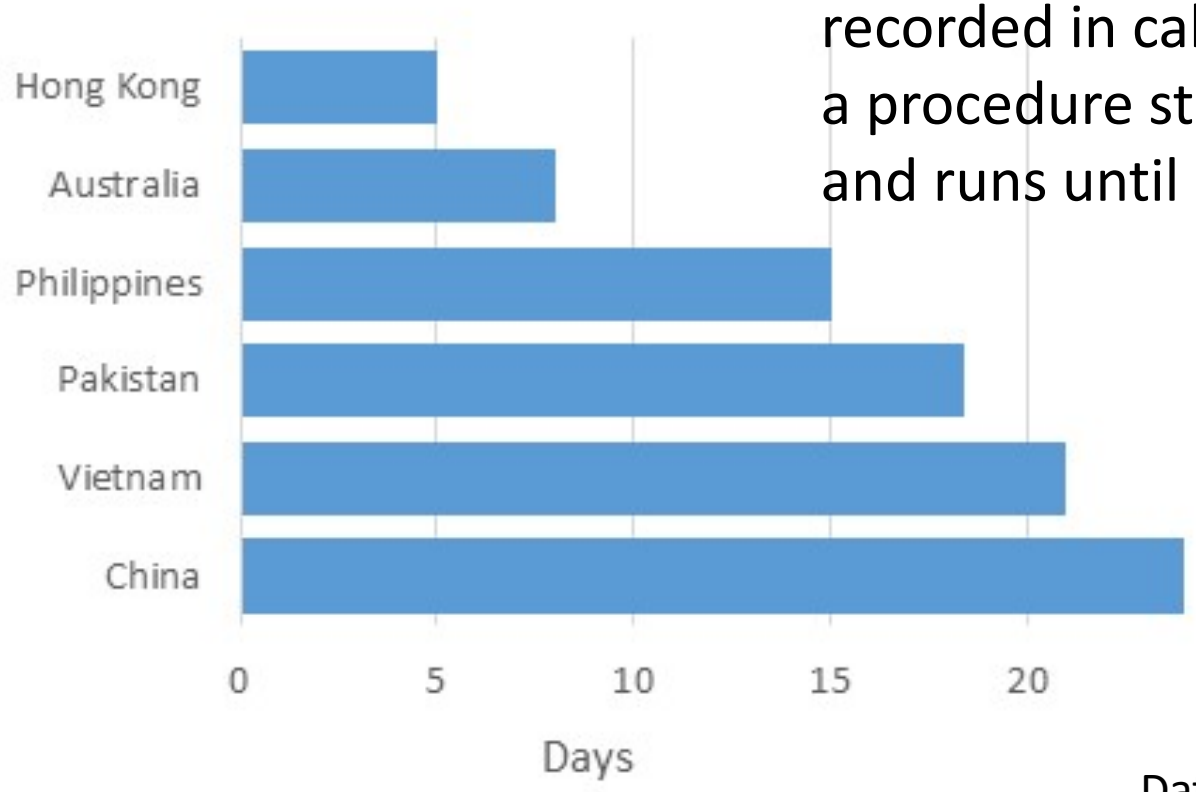
Residues in China

Chemical	Type	MRL (mg/kg)
Difenoconazole	Fungicide	1.00
Pyraclostrobin	Herbicide	0.05
Profenofos	Pesticide	0.20
Mancozeb	Fungicide	2.00
Carbendazim	Fungicide	0.50
Paclobutrazol	Plant Growth Regulator	0.05
Spirotetramat	Pesticide	0.30*
Cyhalothrin	Pesticide	0.20
Lambda-cyhalothrin	Pesticide	0.20
Cypermethrin	Pesticide	0.70
Beta-cypermethrin	Pesticide	0.70
Prochloraz	Fungicide	2.00
Prochloraz-manganese chloride complex	Fungicide	2.00
Cyprodinil	Fungicide	2.00
Azoxystrobin	Fungicide	1.00
Thiabendazole	Fungicide	5.00
Tebuconazole	Fungicide	0.05
Deltamethrin	Pesticide	0.05
Ethephon	Plant Growth Regulator	2.00

Table 3 Mainland China mango chemical maximum residue levels (USDA, 2017)

*Limit is temporary

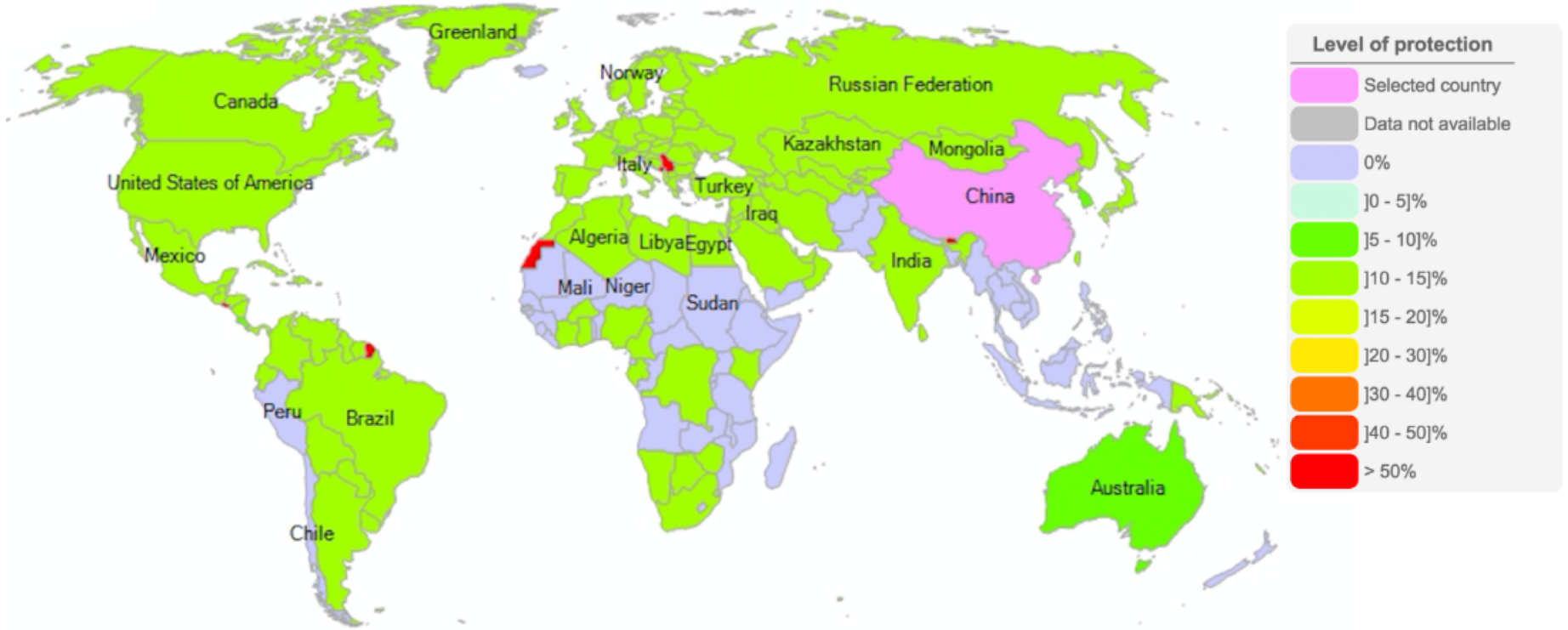
Time for Imports



Time for imports is the time necessary to comply with all procedures required to import goods recorded in calendar days. The time calculation for a procedure starts from the moment it is initiated and runs until it is completed

Data from the World Bank

Mango Tariffs for exporting countries to China



Geographic Distribution of Tariffs applied by Mainland China to Exporting Countries (ITC, 2017)

Tariffs

Exporting country	Tariff (%)
Hong Kong	15
Australia	6
Indonesia	0
Philippines	0
Viet Nam	0
Pakistan	0