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PRIMARY INDUSTRIES

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Tony Tyler, NSW Industry & Investment,  
Australia

# Pesticide Formulation Management and Testing in Australia



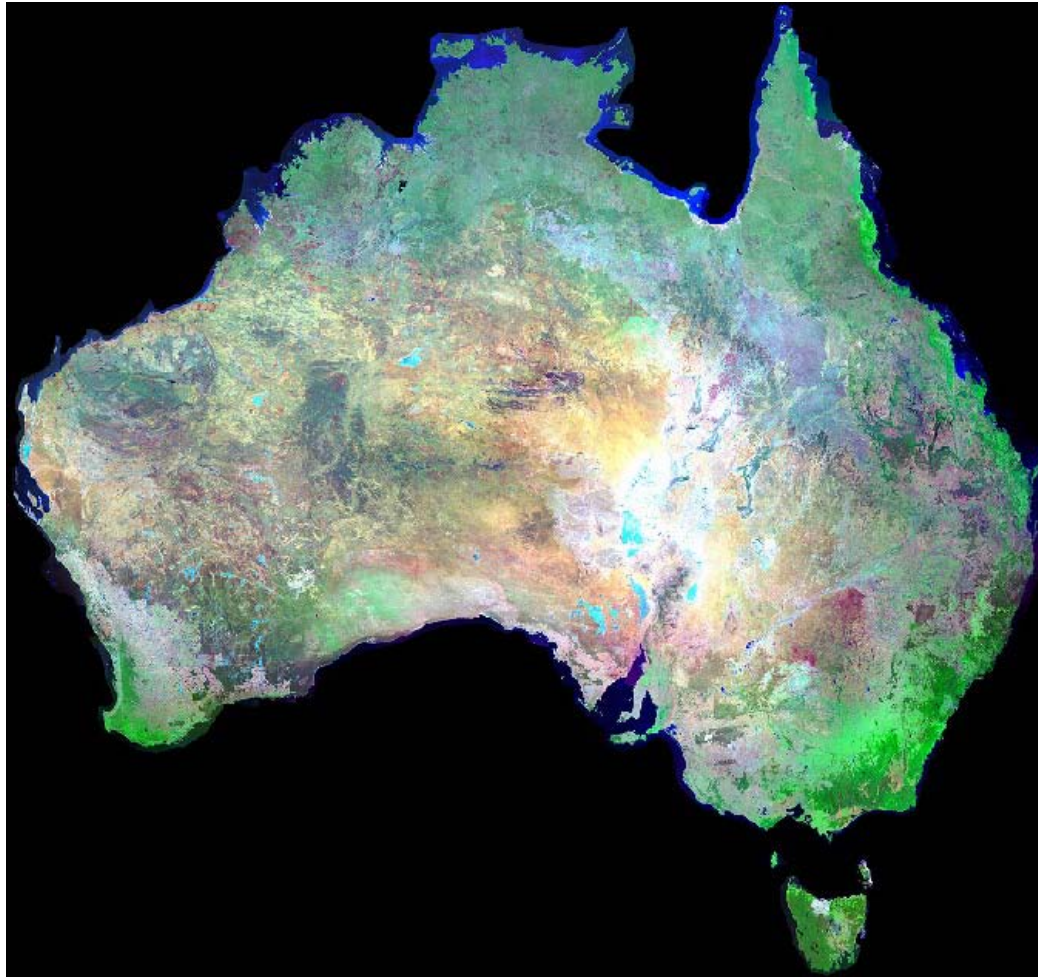
# Introduction

- Pesticides used in Australia since early 1900's
- Australia has tropical and temperate climates
- Many insects
- Considerable risk to agriculture
- Many formulations in use
- Management by analysis of formulations
- Residue testing





# Introduction - Australia





# Historical Background

- Government control of cattle tick for 100 years
- Buffalo fly
- Management of lice in sheep
- Plague locust control
- Concern of fruit fly incursion and decimation of the main fruit growing areas of NSW & Victoria
- Use of pesticides for public health purposes
- Domestic use



# Historical Background

- Insect pest problem– overwintering, insect resurgence
- Supply of pesticides
- Laboratory and advisory perspective
- Present a number of examples of pesticide use and management



# Cattle Ticks

- Number of chemicals used in the past, some supplied by government agency
- Arsenic, DDT, Organochlorines, Organophosphates, Carbamates
- Currently Amitraz, Cypermethrin, Chlorfenvinphos
- Amitraz used extensively
- Very little Amitraz resistance after 35 years of use (1976)
- Resistance was prevented by testing to manage formulation



# Cattle Ticks

- Management & efficacy
- Tick control / Tick fever
- Tickicides supplied
- Dips managed
- Laboratory analysis
- Corrections / AI additions by laboratory recommendation
- Adjustment of dips maintain AI level





# Cattle Ticks

- Charging dips / sprays
  - Amount of AI added to tank
- Stripping Rates
  - Stripping is the rate at which the AI is depleted from a recirculating or dipping tank system
- Topping Rates
  - Addition of extra AI to replace depleted
- Corrections
  - Amount required to return concentration to correct strength





# Plague Locusts

- Federal & State governments - APLC
- Farmers involved as “eyes” – monitoring
- Wait until Locusts “band”
- Spray ULV from Helicopters / aircraft /ground spraying
- Fenitrothion, Chlorpyrifos, other OP used
- Climate conditions can produce plagues across several states simultaneously
- numbers indicate Australian spring & summer 2010 will be very bad



# Plague Locusts





# Plague Locusts

*The biggest threat is expected to strike from mid-September through October - springtime in Australia.*

*Australian Plague Locust Commission: swarms of migrating locusts can travel more than 500 kilometers per day. Swarms of up to 25 square kilometers can form; a swarm of just 1 square kilometer can consist of up to 50 million locusts and consume 10 metric tons of crops and other vegetation every 24 hours.*

*Until about two weeks from the time they hatch, locusts are flightless and can be sprayed with insecticides on the ground. Once they are airborne, however, they must be sprayed from the air.*

Reference FCI



# Fruit Fly

- Papaya Fruit Fly – Queensland
- Must prevent incursion into fly free area and overseas
- Tomatoes / Mangos / Capsicum / Tropical Fruits
- Dimethoate, Fenthion used to treat fruit
- Packing houses
  - Prepare solutions in baths
  - Dip or plunge fruit
  - Testing of formulations
  - Accreditation to transport interstate & export overseas





# Fruit Fly





# Grain Fumigants

- Australia produces a large amount of grain for export
- Fumigation required against borers, beetles
- Aluminium Phosphide, MeBr
- Storage on farm in silos → transport to ports → ship overseas
- Very low incidence of residues of herbicides, fungicides, insecticides in tested grain



# Grain Fumigants







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# Grain Fumigants





# Internal Parasites in Animals

- Problem in Cattle, Sheep, Goats, Deer
- Drenching used extensively
- Liver Fluke
- Worms
- Ivermectin type products widely used



# Public Health Uses in Australia

- Mosquitoes - no malaria in Australia, but Dengue and Ross River fever are debilitating mosquito borne diseases
- Flies
  - food contamination
  - sand fly - irritating bites
- Ticks – disease
- Fleas - domestic pets
- Head Lice – shampoo treatments





# Public Health Uses in Australia

## ■ Insecticides

- SP mainly, sprays, wide range in use
- OP
- PBO synergist

## ■ Repellents

- Citronella
- essential oils
- mosquito coils



# Household / Other Use

- Cockroach Baits
- Ant Powders
- Termiticides
- 1080 Baits – Foxes
- Commercial Pest controllers



# Residue Testing in Australia

- NRS manage very extensive range of programs
  - Meat
  - Grain
  - Fruit & vegetables
  - Fish
  - Honey
  - Milk
  
- Fruit & vegetable surveys – number of state surveys



# Residue Testing in Australia

- Residue testing performed for many years – since 1960's
- Many 1000's of samples analysed annually
- Large number of pesticides
- Laboratories in Australia
  - Government
  - Private
- Very low incidence of residues detected





# Lessons in Formulation Management

- Australian Farmers, producers are using pesticides responsibly
- Pesticide management at farm level
- Breakdown in dipping baths – fruit dips, dog washes
- Need to replace solutions when depleted
- Pesticides of low persistence → very low soil residues



# Lessons in Formulation Management

- Charging dips & sprays – importance of accurate measurement
- AI Stripping / Loss / Use rates – not well understood
- Topping or Replacement
- Corrections require testing, advice and management



# Conclusion

- Pesticide use is essential in Australia
- Australia has managed to maintain the integrity of formulations
- Good management has ensured long term efficacy and safe use
- Prevented resistance – e.g. Amitraz 35 years
- Use at correct strength as per label
- Successful storage in areas of elevated temperatures
- Residues in food minimised



# Conclusion

- Lice control with OP, SP pesticides good efficacy
- Fruit fly control with OP very good
- Grain fumigants protect grain for export
- Drenches effective
- Other uses - pest controllers regulated
- Very little reported misuse of pesticides in Australia



Thank you