An overview of Cherry RD&E in Australia; Climate and Challenges

Penny Measham, Dugald Close, Simon Boughey
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Australia
Australia

- Production
- Challenges to production
- National Approach to RD&E
  - Linking Industry and Research priorities

- Extension approach
Australian production systems

- Bush style training
- Mazzard, Colt
- Lapins, Simone, Sweetheart, Stella, Kordia, Regina, Sylvia, Van, Sweet Georgia
- Netted
- Drip irrigation
Production regions
# Production regions

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<th>Enterprises</th>
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<th>Production</th>
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<td>Qld</td>
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*Harvest windows by Australian State: darker shades represent main crop volume*
Exports

• Increasing (due to % exported)
Export destinations

- 15000 t/year
- $120m
- 20% exported
  - Hong Kong
  - Taiwan
  - SE Asia
  - Middle East
  - UK/Europe
Challenge - Competition

- Chile
  - Quantity
  - 55000 t/year
  - 26000 t to SE Asia
  - Big fruit (>26mm)
  - Sea freight

- 20-40 days post-harvest travel
Challenge – Export Markets

• Market Access – China, Thailand
  – Fruit fly protocols
  – Region/location
  – Tasmania
Challenge – Domestic Markets

- Statistics – knowledge of industry
- Fruit Quality – Retail activities
- Retail awareness and knowledge
- Consumer surveys
  - Consumer trends
Spotted anything unusual?
# IPM Calendar for Cherries 2012

## Growth Stages

### Early May
- **Cherry EECW**: Early EECW first observed. 
- **Cherry Cider**: Cider moth eggs first observed. 
- **Cherry Canker**: Canker first observed. 
- **Cherry Blight**: Blight first observed. 
- **Cherry Fruit Fly**: Fruit fly first observed. 

### Mid-May
- **Cherry EECW**: EECW first observed on leaves. 
- **Cherry Cider**: Cider moth larvae first observed. 
- **Cherry Canker**: Canker first observed on trunks. 
- **Cherry Blight**: Blight first observed on leaves. 
- **Cherry Fruit Fly**: Fruit fly first observed on fruit. 

### Late May
- **Cherry EECW**: EECW first observed on flowers. 
- **Cherry Cider**: Cider moth larvae first observed on fruit. 
- **Cherry Canker**: Canker first observed on branches. 
- **Cherry Blight**: Blight first observed on branches. 
- **Cherry Fruit Fly**: Fruit fly first observed on branches. 

### June
- **Cherry EECW**: EECW first observed on young leaves. 
- **Cherry Cider**: Cider moth larvae first observed on young leaves. 
- **Cherry Canker**: Canker first observed on shoots. 
- **Cherry Blight**: Blight first observed on shoots. 
- **Cherry Fruit Fly**: Fruit fly first observed on shoots. 

### July
- **Cherry EECW**: EECW first observed on young fruit. 
- **Cherry Cider**: Cider moth larvae first observed on young fruit. 
- **Cherry Canker**: Canker first observed on fruit. 
- **Cherry Blight**: Blight first observed on fruit. 
- **Cherry Fruit Fly**: Fruit fly first observed on fruit. 

### August
- **Cherry EECW**: EECW first observed on mature fruit. 
- **Cherry Cider**: Cider moth larvae first observed on mature fruit. 
- **Cherry Canker**: Canker first observed on mature fruit. 
- **Cherry Blight**: Blight first observed on mature fruit. 
- **Cherry Fruit Fly**: Fruit fly first observed on mature fruit. 

### September
- **Cherry EECW**: EECW first observed on pruning wounds. 
- **Cherry Cider**: Cider moth larvae first observed on pruning wounds. 
- **Cherry Canker**: Canker first observed on pruning wounds. 
- **Cherry Blight**: Blight first observed on pruning wounds. 
- **Cherry Fruit Fly**: Fruit fly first observed on pruning wounds. 

### October
- **Cherry EECW**: EECW first observed on winter buds. 
- **Cherry Cider**: Cider moth larvae first observed on winter buds. 
- **Cherry Canker**: Canker first observed on winter buds. 
- **Cherry Blight**: Blight first observed on winter buds. 
- **Cherry Fruit Fly**: Fruit fly first observed on winter buds. 

### November
- **Cherry EECW**: EECW first observed on dormancy. 
- **Cherry Cider**: Cider moth larvae first observed on dormancy. 
- **Cherry Canker**: Canker first observed on dormancy. 
- **Cherry Blight**: Blight first observed on dormancy. 
- **Cherry Fruit Fly**: Fruit fly first observed on dormancy. 

### December
- **Cherry EECW**: EECW first observed on dormancy. 
- **Cherry Cider**: Cider moth larvae first observed on dormancy. 
- **Cherry Canker**: Canker first observed on dormancy. 
- **Cherry Blight**: Blight first observed on dormancy. 
- **Cherry Fruit Fly**: Fruit fly first observed on dormancy. 

### January
- **Cherry EECW**: EECW first observed on dormancy. 
- **Cherry Cider**: Cider moth larvae first observed on dormancy. 
- **Cherry Canker**: Canker first observed on dormancy. 
- **Cherry Blight**: Blight first observed on dormancy. 
- **Cherry Fruit Fly**: Fruit fly first observed on dormancy. 

### February
- **Cherry EECW**: EECW first observed on dormancy. 
- **Cherry Cider**: Cider moth larvae first observed on dormancy. 
- **Cherry Canker**: Canker first observed on dormancy. 
- **Cherry Blight**: Blight first observed on dormancy. 
- **Cherry Fruit Fly**: Fruit fly first observed on dormancy. 

### March
- **Cherry EECW**: EECW first observed on dormancy. 
- **Cherry Cider**: Cider moth larvae first observed on dormancy. 
- **Cherry Canker**: Canker first observed on dormancy. 
- **Cherry Blight**: Blight first observed on dormancy. 
- **Cherry Fruit Fly**: Fruit fly first observed on dormancy. 

### April
- **Cherry EECW**: EECW first observed on dormancy. 
- **Cherry Cider**: Cider moth larvae first observed on dormancy. 
- **Cherry Canker**: Canker first observed on dormancy. 
- **Cherry Blight**: Blight first observed on dormancy. 
- **Cherry Fruit Fly**: Fruit fly first observed on dormancy. 

### Budbreak
- **Cherry EECW**: EECW first observed on budbreak. 
- **Cherry Cider**: Cider moth larvae first observed on budbreak. 
- **Cherry Canker**: Canker first observed on budbreak. 
- **Cherry Blight**: Blight first observed on budbreak. 
- **Cherry Fruit Fly**: Fruit fly first observed on budbreak. 

### Flowering
- **Cherry EECW**: EECW first observed on flowering. 
- **Cherry Cider**: Cider moth larvae first observed on flowering. 
- **Cherry Canker**: Canker first observed on flowering. 
- **Cherry Blight**: Blight first observed on flowering. 
- **Cherry Fruit Fly**: Fruit fly first observed on flowering. 

### Pinch-off
- **Cherry EECW**: EECW first observed on pinch-off. 
- **Cherry Cider**: Cider moth larvae first observed on pinch-off. 
- **Cherry Canker**: Canker first observed on pinch-off. 
- **Cherry Blight**: Blight first observed on pinch-off. 
- **Cherry Fruit Fly**: Fruit fly first observed on pinch-off. 

### 1st Green
- **Cherry EECW**: EECW first observed on 1st green. 
- **Cherry Cider**: Cider moth larvae first observed on 1st green. 
- **Cherry Canker**: Canker first observed on 1st green. 
- **Cherry Blight**: Blight first observed on 1st green. 
- **Cherry Fruit Fly**: Fruit fly first observed on 1st green. 

### 2nd Green
- **Cherry EECW**: EECW first observed on 2nd green. 
- **Cherry Cider**: Cider moth larvae first observed on 2nd green. 
- **Cherry Canker**: Canker first observed on 2nd green. 
- **Cherry Blight**: Blight first observed on 2nd green. 
- **Cherry Fruit Fly**: Fruit fly first observed on 2nd green. 

### 3rd Green
- **Cherry EECW**: EECW first observed on 3rd green. 
- **Cherry Cider**: Cider moth larvae first observed on 3rd green. 
- **Cherry Canker**: Canker first observed on 3rd green. 
- **Cherry Blight**: Blight first observed on 3rd green. 
- **Cherry Fruit Fly**: Fruit fly first observed on 3rd green. 

### Early Red
- **Cherry EECW**: EECW first observed on early red. 
- **Cherry Cider**: Cider moth larvae first observed on early red. 
- **Cherry Canker**: Canker first observed on early red. 
- **Cherry Blight**: Blight first observed on early red. 
- **Cherry Fruit Fly**: Fruit fly first observed on early red. 

### Full Red
- **Cherry EECW**: EECW first observed on full red. 
- **Cherry Cider**: Cider moth larvae first observed on full red. 
- **Cherry Canker**: Canker first observed on full red. 
- **Cherry Blight**: Blight first observed on full red. 
- **Cherry Fruit Fly**: Fruit fly first observed on full red. 

### Harvest
- **Cherry EECW**: EECW first observed on harvest. 
- **Cherry Cider**: Cider moth larvae first observed on harvest. 
- **Cherry Canker**: Canker first observed on harvest. 
- **Cherry Blight**: Blight first observed on harvest. 
- **Cherry Fruit Fly**: Fruit fly first observed on harvest. 

### Post-Harvest
- **Cherry EECW**: EECW first observed on post-harvest. 
- **Cherry Cider**: Cider moth larvae first observed on post-harvest. 
- **Cherry Canker**: Canker first observed on post-harvest. 
- **Cherry Blight**: Blight first observed on post-harvest. 
- **Cherry Fruit Fly**: Fruit fly first observed on post-harvest.
Challenge - Climate risks

1. Late season rainfall
2. Insufficient chill
3. Temperatures for pollination
4. Heatwaves
5. Heat accumulation
6. Wind/hail damage
7. Frost damage
8. Insufficient rainfall/irrigation

Thomas et al (2012)
Late season rainfall

• Low confidence but likely that many areas will see
  – decrease in total volume (winter/spring)
  – Increase in drought frequency
  – Unpredictability in seasonal patterns
  – Fruit cracking/rot

Kirono et al. (2011) BoM (2012)
Insufficient chill

- High confidence in temp. increases
- Decrease in low temps
- Many areas marginal for chill
  - WA
- Knowledge of specific varieties
- Bud burst
Focussed Research

• Late season rainfall

• Cracking/rot
  – Improving marketable yield
    • Management techniques by crack type
  – Impact of late season rainfall
    • Building early resilience (cuticle integrity/irrigation/nutrition)
    • Reduced vascular uptake (root pruning/vascular drivers and water budgets)
  – Effect of Cherry Variety and Fruit Density on Fruit Rot
Focussed Research

- Insufficient chill
  - Sustainable Production in Marginal Regions
    - Response to chill
    - Variety thresholds
    - Carbohydrates
    - Carb reserves
    - Summer pruning

- Temperature
  - Style retention and nose cracks
    - Growth rates/cytolin
  - Fruit set
    - Carbohydrates/girdling/root pruning
What does all this mean?
Dissemination?

• All stakeholders?
• All regions?
• Relevant?
• Applicable?

• Who?
National Approach to RD&E

• Co-ordination – many discrete units
• RD&E committee
  – Industry bodies, growers, researchers
• TIA lead agency, NSW, SA, Vic
• Avoid duplication
• Project funding approvals
• Ensure extension
National Approach

• Cherry Growers Australia
• Research Interaction
• National Roadshow
  – National and local
  – Research and Industry
• Demonstration sites
  – Researcher and Grower
Collaborations

- Research Agencies SARDI, NSW DPI, Vic DPI
  - John Golding, Andrew Jessup, Darren Graetz, Dane Thomas
- Cherries Growers Australia
- Industry State Associations
- Horticulture Australia
- International Researchers
  - Lynn Long, Matt Whiting, Mekjell Meland, Clive Kaiser
- Growers
  - Howard Hansen, Nic Hansen, Tim Reid, Neil Polley, Nick Noske, Mike Oakford, Wayne Thompson, Ryan Hankin, Nick Owens
TIA Perennial Horticulture Centre

Cherry people!

- Centre Leader – Dugald Close (physiology)
- Senior Research Fellow – Sally Bound (fruit quality, crop load)
- Research Fellows – Nigel Swarts (Nutrition/fertigation)
  - Jo Jones (Carbohydrates)
  - Karen Barry (Pathology)
  - Penny Measham (Physiology, water relations)
- Post graduate student – Eric Mertes (post harvest)
- Honours students - Nick MacNair, Michael Tarbath, Matt Calverley
Time for Questions?