



# Kiwifruit Vine Health

Responding to incursion threats  
Lessons from COVID-19



# Disease management principles in incursion response

Core disease management principles applied for large incursions that we have experienced

- **Find** - Early detection (disease identification)
  - Surveillance and testing
  - Tracing
- **Contain**
- **Control**
- **Eliminate**

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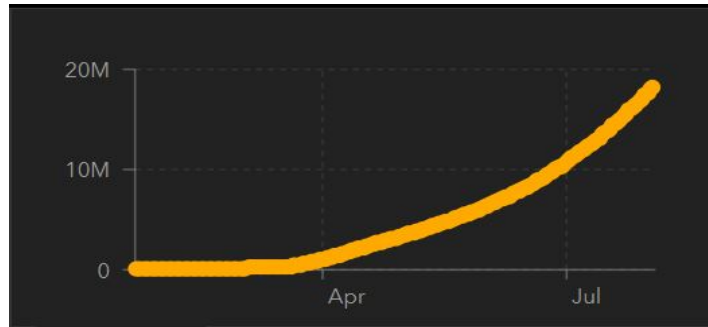


# COVID – 19: What we know

Pandemic – multiple spread across multiple countries

Three key factors determine health impact:

- number of cases
- transmission dynamics
- severity



Global Deaths  
**689,428**

154,860 deaths  
US

94,104 deaths  
Brazil

47,746 deaths  
Mexico

46,286 deaths  
United Kingdom

Total Confirmed  
**18,082,616**

Confirmed Cases by  
Country/Region/Sovereignty

**4,667,955** US

**2,733,677** Brazil

**1,803,695** India

**849,277** Russia

**511,485** South Africa

**439,046** Mexico

**428,850** Peru

**359,731** Chile

**317,651** Colombia

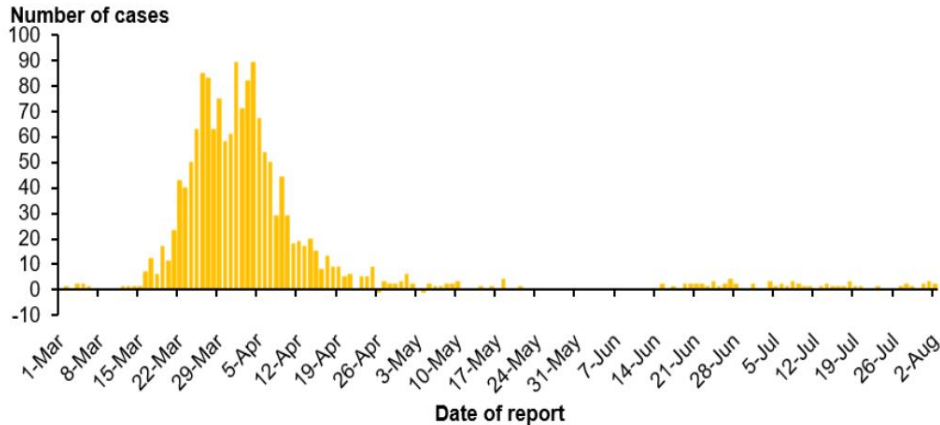
As at 9.00 am, 3 August 2020



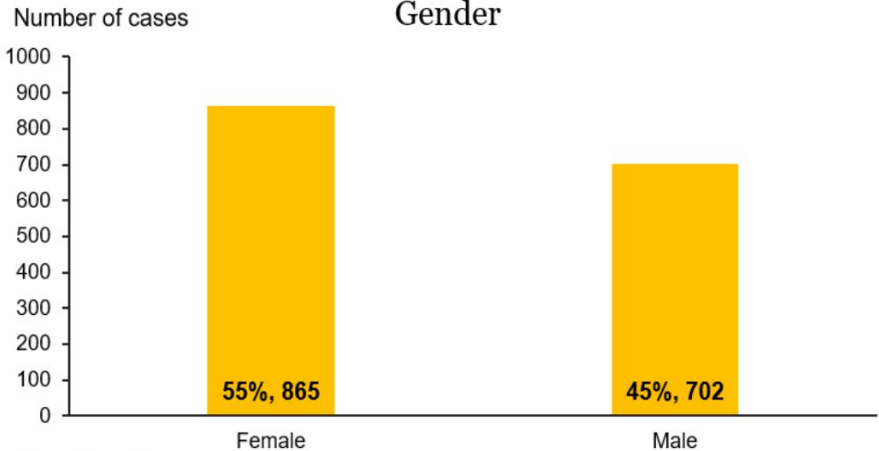
	Total	Change in last 24 hours
Number of confirmed cases in New Zealand	1,217	2
Number of probable cases	350	0
Number of confirmed and probable cases	1,567	2
Number of recovered cases	1,518	0
Number of deaths	22	0
Number of active cases	27	2
Number of cases currently in hospital	0	0

### Total cases by gender

Daily confirmed and probable cases



Gender



New confirmed and probable cases over time, as at 9.00 am, 3 August 2020

Total cases by gender as at 9.00 am, 3 August 2020

# Number of cases: Key points



- Without effective control will overwhelm public health system
- Differences in age, population distribution, occupation, socioeconomic, ethnicity all have an impact on spread
- Understanding of distribution informs control measures (containment)
  - case isolation
  - isolation of contacts
  - workplace closure
  - social distancing (at work and outside)
  - educational institute closure
  - border closure
  - isolation high risk people
  - health promotion

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# Transmission: COVID-19 vs influenza



- How disease spreads within population (droplet – sneeze aerosol, surfaces, hands)
- Reproductive rate is crucial = average number of secondary infections per case
  - Estimated at 2.5 for COVID (c/- 1.3 in influenza)
  - Desired to be  $<1$  for reduction to elimination
  - Physical distancing acts to reduce this rate
- Population 100% susceptible with up to 90% infected (c/- 11% influenza)
- Pre symptomatic infection (up to 3 days) in 12% COVID cases (c/- nil in influenza)
- Length of immunity unknown (50%+ immune for 3+ years for influenza)

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# Severity

- Proportion population needing medical intervention
- Age distribution
- ICU cases and impact (death rate)
- State of health services
- Population density
- Pre-disposed sectors of population

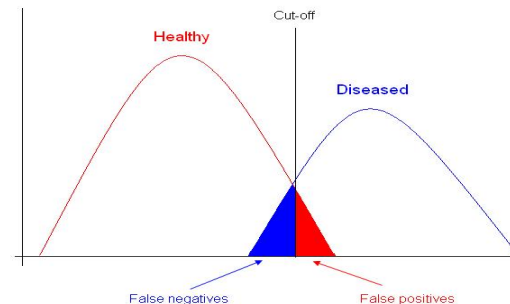
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# Surveillance and testing



- Essential to understand status of disease within country
- Proportion of susceptible population needs to be tested to determine proof of freedom
- Quality of test important
  - How long following infection to test positive
  - False +’ves and –’ves
    - (specificity and sensitivity)
  - Predictive values







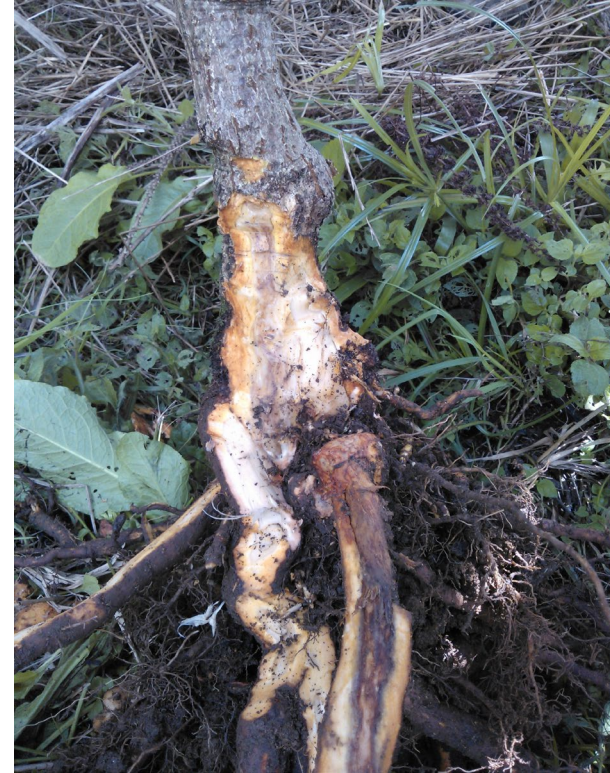
# Lessons to take from COVID-19

- Understanding dynamic of susceptible population (host species)
- Understanding transmission rates – reproductive rate
- Understanding severity of symptoms
- Importance of latency (asymptomatic spread)
- Movement restrictions to reduce transmission (social distance, isolation/quarantine)
- Prevention/treatment (vaccine or therapy)
- Good biosecurity practice (hygiene)
- Tracing to investigate source and manage control

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# Brazilian Wilt (*Ceratocystis fimbriata*)





## ***Ceratocystis fimbriata* – case study**

- Highly infective - over 50% vine loss
- Long latency period, up to 6 months without symptoms while able to spread
- Spread through soil and plant material
  - Good biosecurity practice essential to limit impacts and rate of spread
  - Tracing essential
  - Understanding of risk essential
- **Massive economic impact**

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CATCH IT



SNAP IT



REPORT IT

**REPORT THE UNUSUAL**

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