Sugar Research Australia

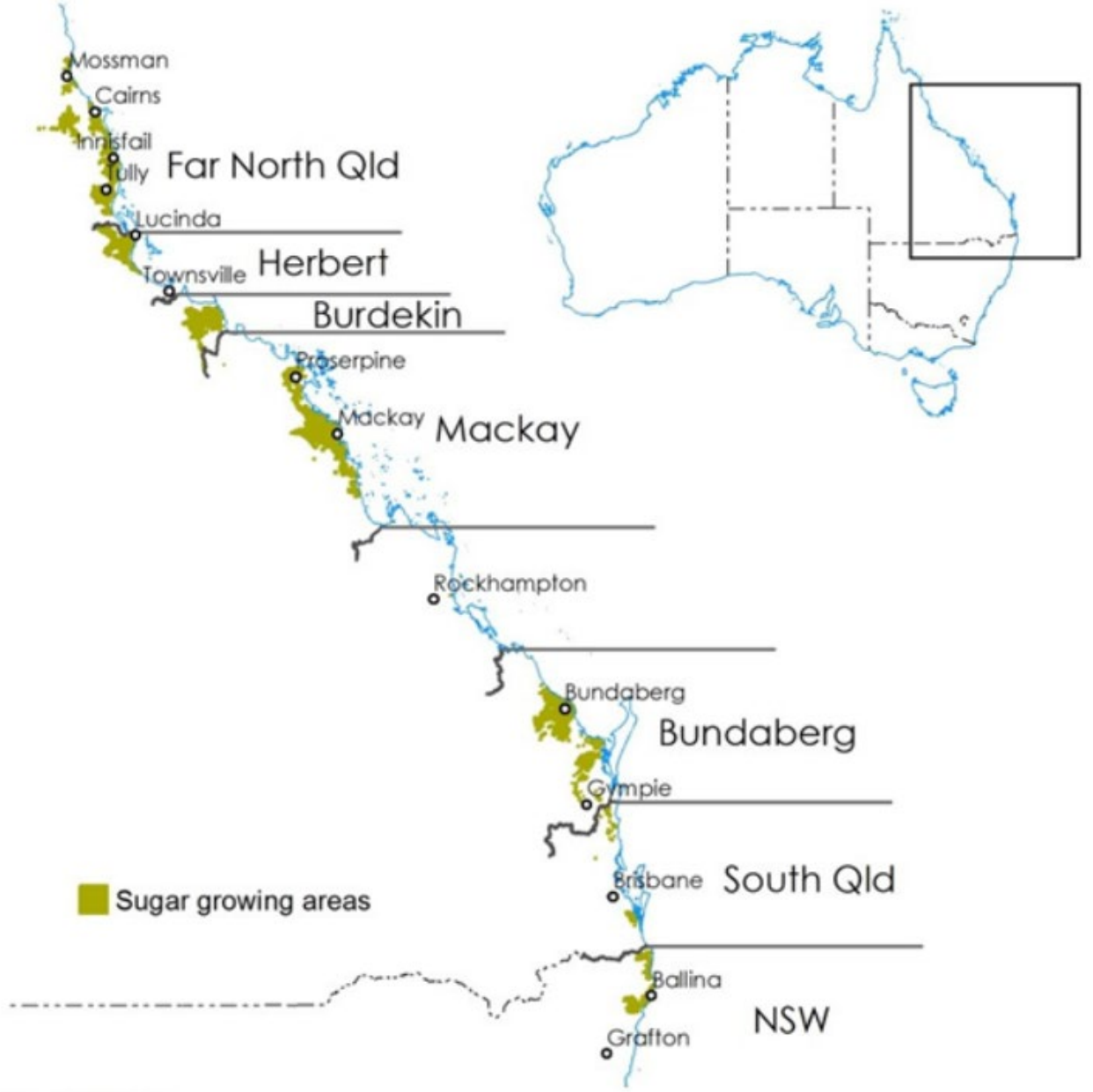
Biosecurity surveillance for the Australian sugarcane industry

Sugar Research Australia

- 130 staff across 8 research facilities.
- $42.8M investment in RD&E activities in 2023-24.
- 66 research investment and delivery partners

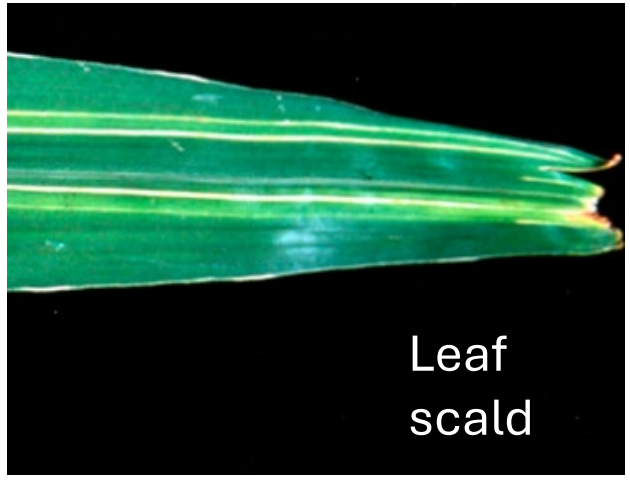
The Australian sugarcane industry

- 31.1 million tonnes of sugarcane were produced in 2020.
- 355 thousand hectares were harvested for sugarcane milling.
- 3,830 sugarcane businesses produced sugarcane.
- 21 sugar mills in Australia
- $1.3 billion value of sugar exports
- $1.5 billion value of industry revenue (includes sugar, electricity and molasses)
- $3.8 billion Gross Value Add (GVA) in Queensland



Sugarcane diseases (endemic)

- Most controlled by resistant varieties and clean planting material.



- Ratoon Stunting Disease (Leifsonia xyli subsp. Xyli)) has no easily diagnosed symptoms.
  - Molecular assays (qPCR, LAMP) good for screening planting material, but logistically difficult to assess commercial crops.
  - Current research is developing NIR-based assessment of commercial crops in the sugar mill.

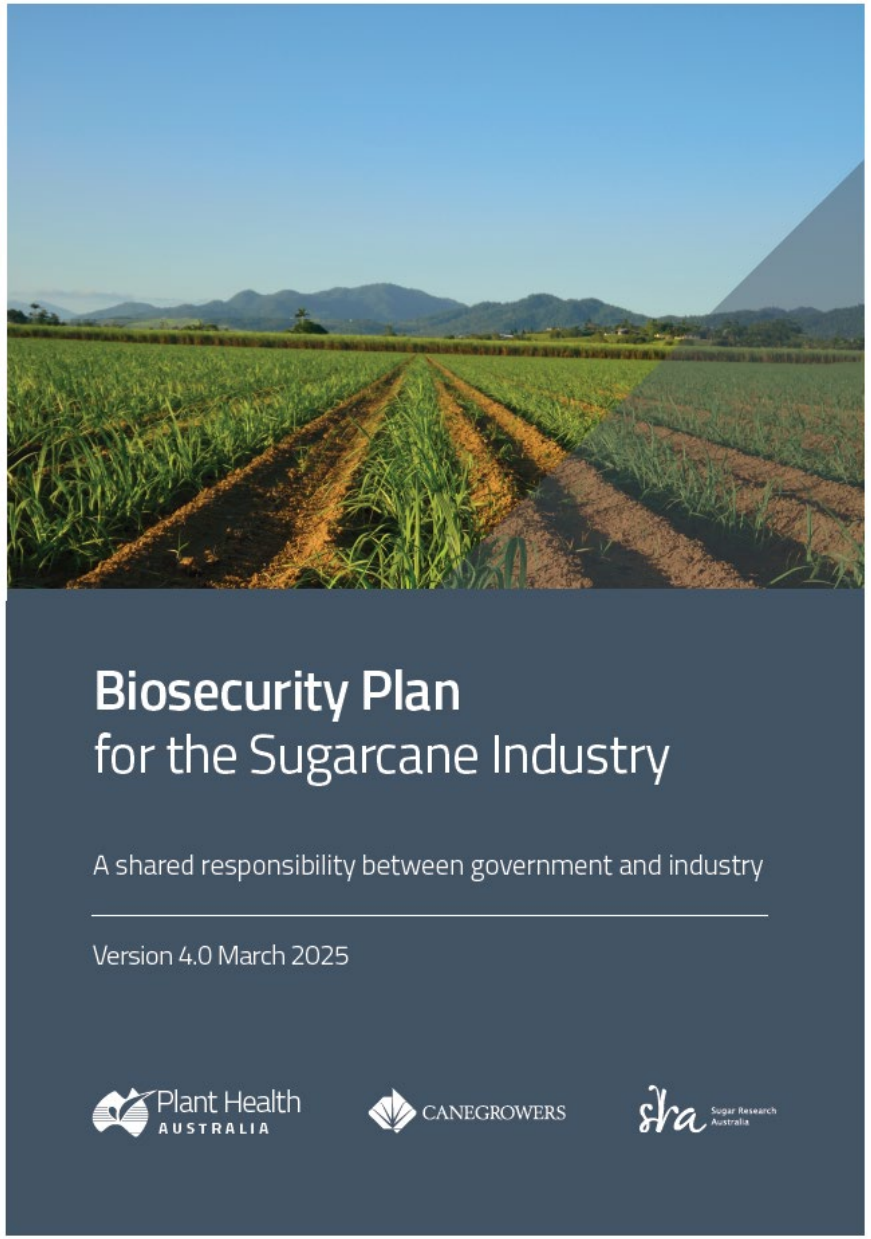
Sugarcane pests (endemic)

- Canegrubs (20 species, found in all cane growing areas).
  - Dependent on imidacloprid for control.
  - SRA actively looking for alternatives.

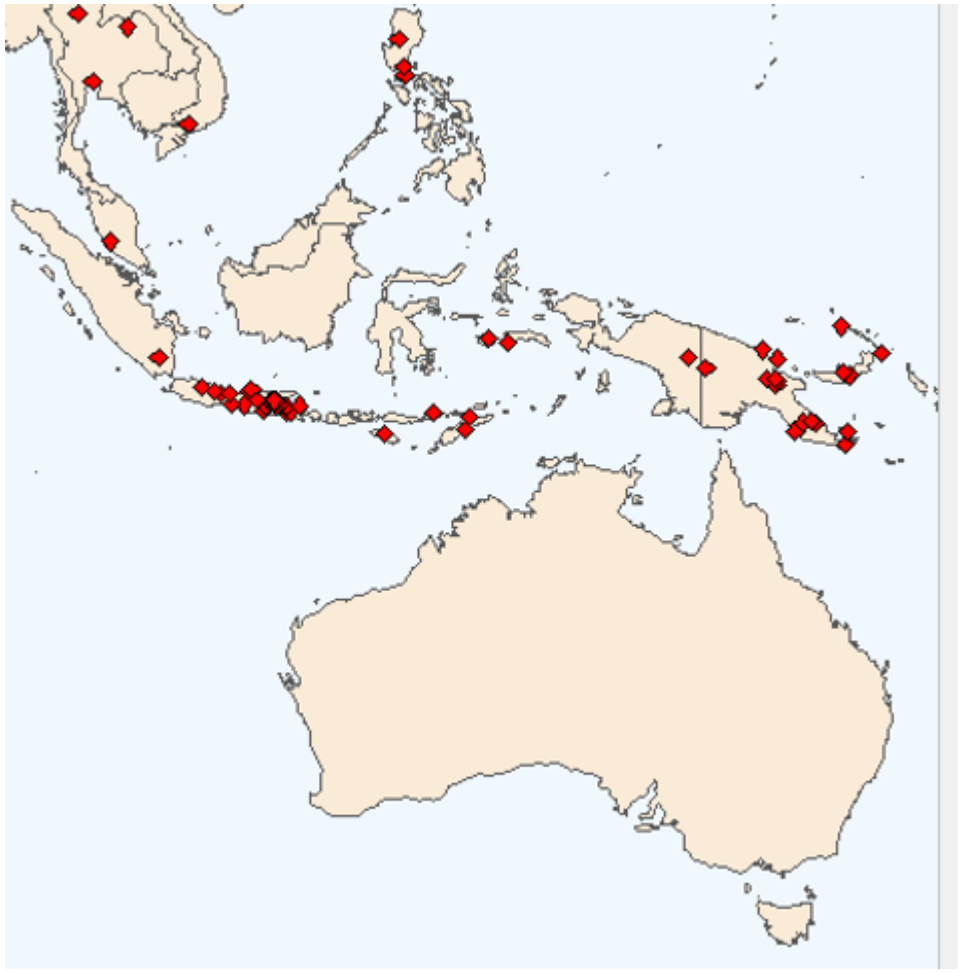
- Soldier flies.
  - Emerging pests.
  - Multiple species.
  - Currently no effective controls.

Exotic biosecurity threats

- Exotic Moth Borers (NPPP).
  - *Chilo auricilius*, *C. infuscatellus*, *C. sacchariphagus*, *C. terrenullus*, *C. tumidicostalis*, *Scirpophaga excerptalis* and *Sesamia grisescens*
- 29 High Priority Pests (HPPs).
  - Plus additional 20 Exotic Pests to Monitor.
  - Identified from 475 pests in TST.
  - Mostly Lepidoptera, Hemiptera and Coleoptera

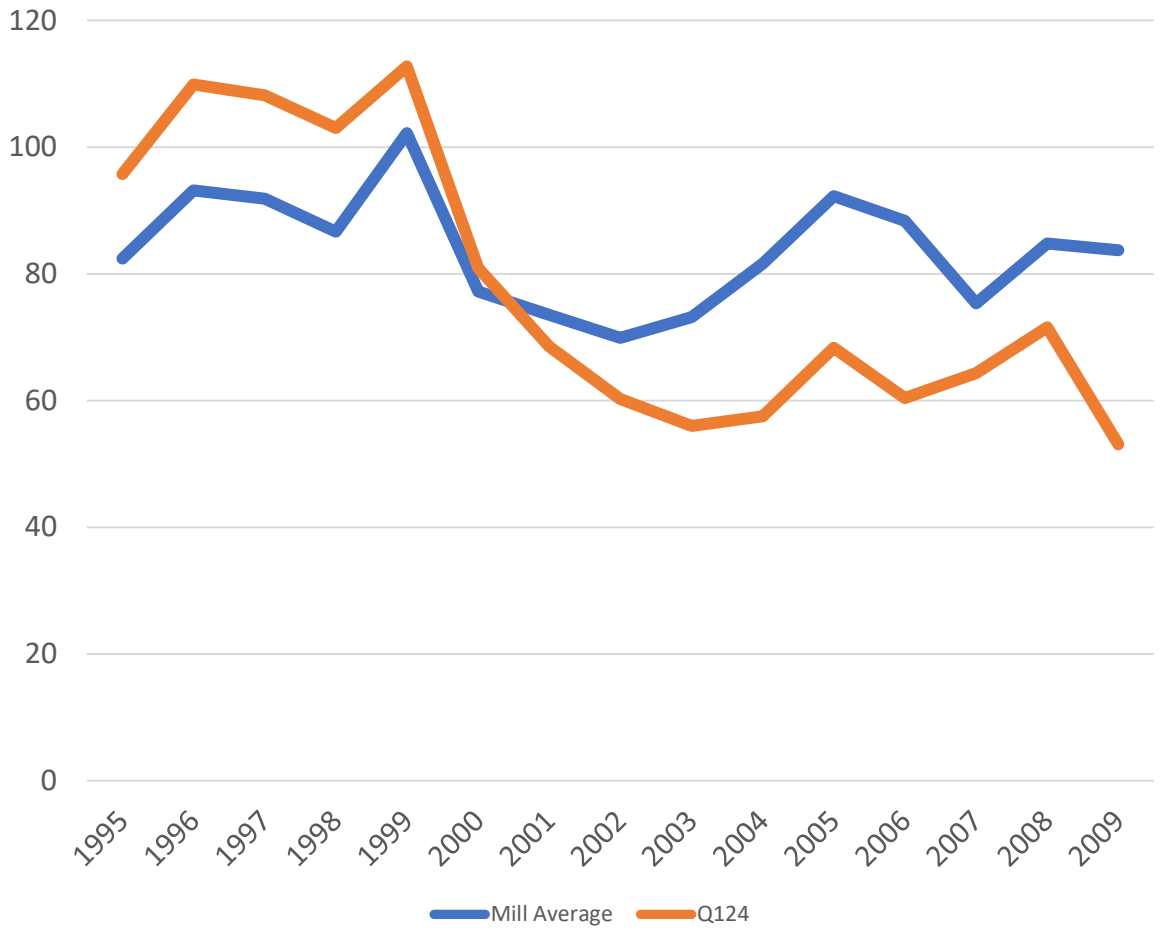


Exotic biosecurity threats



Sugarcane top shoot borer
(Scirpophaga exerptalis)

Commercial Impact of Orange Rust



Yield (t/ha) of Q124 at Isis Central Mill compared to the mill average.

(Data provided by Jason Eglinton)

Surveillance in the Top End: NAQS

- 16 sugarcane pests included in NAQS Target List A
  - ➢ *Aleurolobus barodensis*, *Ceratovacuna lanigera*, *Chilo auricilius*, *C. infuscatellus*, *C. partellus*, *C. sacchariphagus, C. terrenellus, Eumetopina flavipes, Fulmekiola serrata, Hypomeces pulviger, Perkinsiella vastatrix, Scapanes australis, Scirpophaga excerptalis, Sesamia grisescens, Sesamia inferens, Yamatotettix flavovittatus.*

- NAQS undertake surveillance in Northern Australia and Torres Strait
  - No commercial crops sampled

- Future potential collaboration with Indigenous Ranger Program

Examples of recent biosecurity projects

- Technology development is most successfully done through collaborative research, enabled by the Plant Biosecurity Research Initiative (PBRI; https://www.pbri.com.au/)

  - Examples include:
    - iMAPpests – Improving plant pest management through cross industry deployment of smart sensor, diagnostics and forecasting (https://imappests.com.au/)
    - Boosting National Diagnostic Capacity for Plant Production Industries

eDNA sampling for sugarcane biosecurity threats

- eDNA sampling and qPCR / LAMP / metabarcoding assays for several species:
  - *Chilo auricilius*, *Chilo sacchariphagus, Chilo terrenellus, Eumetopina flavipes,* and *Perkinsiella sachariicida*
- *Chilo* assays tested successfully in PNG and Indonesia.

EnviroDNA

Queensland Government

Industry surveillance activities

- Crop inspections done by Productivity Board agronomists. Quality of record keeping varies between districts.
- Some surveillance done within research projects.
- Ideally, growers would take the lead in on-ground surveillance of their crops, but this is not always the case (because “SRA are looking after biosecurity”)
  - ➢ Lots of opportunity to improve on-farm biosecurity practices
- Industry surveillance data is valuable, but only if it meets required data standards.


Any questions?