BSES Biosecurity: Safeguarding the sweetest industry

Who is BSES?
BSES Limited is the principal provider of Research, Development and Extension for the Australian sugarcane industry. BSES stations and offices are located throughout Queensland and northern New South Wales, with approximately 160 staff working on all areas of sugarcane growing and production. Biosecurity is one of the key RD&E streams in BSES.

BSES Biosecurity
BSES is involved with numerous organisations, state and federal governments to protect the sugarcane industry against biosecurity threats and to ensure a coordinated Emergency Response to pest or disease incursions. We have developed Incursion Management Plans for most biosecurity threats to Australia.

International Biosecurity

AQIS, PHA & BSES

- Pre-Border
  - Identifying exotic threats
  - Managing quarantine risks offshore
  - Offshore R&D where pests are endemic
  - Developing diagnostic assays

- Border
  - Implementing effective quarantine for people, machinery, plants and goods
  - Establishing trapping and surveillance networks for pests that may bypass checkpoints
  - Post-entry quarantine germplasm exchange

- Post-Border
  - Minimising risk of regional and property entry and establishment
  - Preparing for timely detection, minimised spread and rapid response to emergency pests

Domestic Biosecurity

DEEDI & BSES

- Movement
  - Plants, machinery and people

- Training
  - Industry staff
  - Post graduate students

- Advice
  - Consultants
  - Experts

- Crop monitoring programs
  - In conjunction with growers, industry, state and federal governments

Examples of biosecurity threats to the Australian sugarcane industry

- Downy mildew (Fungi: exotic Peronosclerospora species)
- Grassy shoot phytoplasma
- White leaf phytoplasma
- Ramu stunt (suspected virus)
- Borers (various species)
- Sugarcane planthoppers (Exotic Perkinsiella and Eumetopina species)
- Woolly aphid (Ceratovacuna lanigera)
- Oriental sugarcane thrips (Fulmekiola serrata)

Current biosecurity research

- Foreign germplasm
  - Import and export up to 50 varieties per year for germplasm exchange, disease resistance screening trials and other BSES projects.

- Resistance screening
  - Endemic disease screening: Screening for smut (Bundaberg), Pachymetra root rot (Tully), red rot, Fiji leaf gall, sugarcane mosaic (Woodford), etc.
  - Exotic pest and disease screening: Screening trials in PNG for sugarcane downy mildew, Ramu stunt and Sesamia borer in conjunction with Ramu Agri-Industries Limited.
  - Surveys
    - Studies of pests and disease in conjunction with Indonesian Sugar Research Institute.
    - Reference samples and diagnostics for AQIS.

- Diagnostic test development
  - Ramu stunt: Determination of causal agent and development of diagnostic test
  - Downy mildew: Development of species specific diagnostic test
  - Exotic and endemic diseases: New methods researched and tested for use in screening of foreign and domestic germplasm and incursion management plans.
  - DNA fingerprinting: Determining exotic borer species.

- Incursion Management Plans
  - List of species for which plans have been developed
    - Chilo spp. (stemborers)
    - Diatraea spp. (stemborers)
    - Doryctes bueti (Longhorn stemborer)
    - Eldana saccharina (African sugarcane borer)
    - Eurema loftini (Mexican rice borer)
    - Eumetopina flavipes (Sugarcane planthopper)
    - Fulmekiola serrata (Oriental sugarcane thrips)
    - Peronosclerospora spp. (Downy mildew)
    - Ramu stunt (suspected virus)
    - Scirpophaga spp. (top borers)
    - Sesamia spp. (stemborers)

- Other plans:
  - Sugarcane Smut - A contingency plan for the Australian sugarcane industry
  - Generic incursion management plan – provides general guidelines on what needs to be done following an incursion

- All Incursion Management Plans are available on the BSES website

BSES Biosecurity: protecting the $2 billion Australian sugarcane industry

www.bses.org.au