Biological Control of Weeds in Queensland

Its relevance to the Pacific
Biocontrol Achievements

• Successes
  • Prickly pear, Harrisia cactus, Noogoora burr, Groundsel bush
  • 60-80% of projects at least partially successful

• Benefit/cost analyses
  • Australian weeds 28:1
  • Parthenium 18:1
  • Rubber vine 80:1
  • Noogoora burr 2:1
Funding

- Australian Government
- Queensland Government
- Weeds of National Significance
- ACIAR
- Meat & Livestock Australia
- LandCare
- Catchment Authorities
- Regional Councils
Collaboration

- CSIRO (Brisbane, Canberra & Mexico)
- Australian Universities
- NSW DPI&F
- South Africa
- United Kingdom
- India
- USA
- Papua New Guinea
- Fiji
- East Timor
Qld Projects

AFRS, Sherwood & TWRC, Charters Towers

- Bellyache Bush
- Cat’s Claw Creeper
- Lantana
- Madeira vine
- *Mimosa diplotricha*
- Mother of Millions
- Parthenium
- Prickly Acacia

- *Chromolaena odorata*
- *Mikania micrantha*
Lantana camara

- 31 agents released
- 18 established
- 1 agent being field released
- 2 undergoing host testing
- 4 agents under consideration
- Taxonomic & DNA work progressing
  - 5 Lantana species implicated
Octotoma scabripennis

Teleonemia scrupulosa

Ophiomyia lantanae

Uroplata girardi

Leptobyrsa decora
Ophiomyia camarae

- Leaf-mining fly
- Ex Florida via RSA
- Premature abscission of leaves
- Very damaging in RSA
- CLIMEX model produced - NQ
- First released in Oct 2007
- Mines present at 50 sites
Prospodium tuberculatum

- Leaf rust
- Ex Brazil
- Affects pink-flowering varieties
- Established in Qld & NSW
- Spread up to 40 km
- Defoliation & premature leaf drop at some sites
Falconia intermedia

- Leaf-sucking bug
- Ex Jamaica
- Causes chlorosis & leaf drop
- Prefers non-pink flowering varieties
- Established only in NQ
**Aceria lantanae**
- Budmite
- Stops flowering & seeding, stunts plants
- Host testing by PPRI, RSA

**Puccinia lantanae**
- Leaf & stem rust
- Host testing by CABI, UK
- Affects several *Lantana* spp., *Phyla canescens* & some *Verbena* spp.
**Longitarsus bethae**
- Root-feeding beetle
- Disrupts uptake of water & nutrients
- Increases plant stress, kills plants

**Coelocephalapion camarae**
- Petiole-galling beetle
- Physiological sink
- Disrupts translocation
- Reduces plant growth, flowering

**Eutreta xanthoachaeta**
- Stem-galling fly
- Very damaging in Hawaii in dry areas
- Previously tried in both Aust. & S.A.
Parthenium hysterophorus

- Project initiated in 1974
- 9 insects + 2 fungi introduced
- 7 insects + 2 fungi establ.
- 5 agents widespread
- 3 agents very effective
Zygogramma bicolorata

- Leaf-feeding beetle
- Ex Mexico
- Larvae & adults cause defoliation
- Very damaging & effective agent
- Also released in India
Epiblema strenuana

• Stem-galling moth
• Ex Mexico
• Cause severe symptoms
• Widespread and abundant
• Also released in Sri Lanka, India & China
• Introduced into PNG to control *Xanthium strumarium*
Listronotus setosipennis

- Stem-boring weevil
- Native to Argentina & Brazil
- Adults cause negligible damage
- Widespread but seasonal
- Suitable for drier regions
- Limited impact on its own
Carmenta nr. ithacae

- Clear-wing moth
- Larvae feed on root
- Ex Mexico
- Significant damage
- Limited geographic range
- Very promising
Mimosa diplotricha

- Class 2 weed
- Released *Heteropsylla spinulosa*
- Under control in Qld
- Released in Pacific islands
  - PNG, Fiji, Samoa, Solomons, FSM & Cook Is
Macfadyena unguis-cati

- Class 3 environmental weed
- Affects riparian areas
- Kills/replaces native trees
- Dense mats on forest floor
- Underground tubers
- 2 agents released
Carvalhotingis visenda
- Sap-sucking bug
- From Argentina & Brazil
- Feeds on contents of leaf tissue
- Widespread field establishment
- Easy to rear & release

Hypocosmia pyrochroma
- Leaf-tying moth
- From Argentina & Brazil
- Causes severe defoliation
- Undergoes winter diapause
- Establishment unconfirmed
Anredera cordifolia

- Class 3 weed
- Vigorous climber; copious aerial tubers
- Smothers trees & shrubs
- Difficult to control due to aerial tubers
- No native Basellaceae
**Phenrica sp.**
- Leaf feeding beetle
- Ex Brazil
- Tested in RSA on 27 species
- Colony died out

**Plectonycha correntina**
- Leaf feeding beetle
- Ex Argentina
- Testing complete
  - Release application being prepared
Ecosciences Precinct

Old Boggo Road Gaol
New procedures for releasing insects

- Biosecurity Australia initiated new procedures
- Abandoned the review by 21 co-operators
- Release proposals subject to full Import Risk Analysis
- May take 2-3 years to gain approval
- Serious concerns for us