Department of Employment, Economic Development and Innovation

# Tramp ant management in Queensland through an integrated control centre







### An integrated control centre





- African big headed ants endemic, no action
- Argentine ants one incursion, eradicated
- Tropical fire ants three incursions, eradicated
- Yellow crazy ants state eradication program
- Electric ants (little fire ants) national eradication program
- Red imported fire ants national eradication program
- Ad hoc incursions ready to respond



# Yellow crazy ant (*anoplolepis gracilipes*) management program



### Yellow crazy ants - overview

- State eradication program
- First detected in 2002
- Present in 20 sites, in north, central & south east Queensland
- 274 ha known infested area
- Extensive pathway surveillance indicates they are not widespread
- Current operational protocols
  - Emergency Quarantine Notices
  - 3 treats each year for 2 years
  - surveillance over 2 years
  - no ants found, EQNs lifted



# YCA – what have we learnt...

- Learning
  - BQCC has brought consistency & efficiencies in tramp ant operations introduced operational protocols same as fire ants & electric ants
    - Ben does 3 treats?? Are we doing too many???
  - Active CE is essential most new detections reported by public
- Challenges
  - Urban & forested areas pose different challenges
    - Urban human assisted movement risk but easier to treat
    - Forested harder to treat & survey
  - Don't really know cost or impact of YCA
    - Benefit:Cost Analysis
    - Genetics
      - analysis of current infestations & previous YCA samples
      - Relationships between colonies, number of incursions & spread
  - Securing funding
    - Need results from genetics & B:CA results

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# Electric Ant (*Wasmannia auropunctata*) – Little fire ant Eradication Program



### Electric ants - overview

- National eradication program
- First detected in May 2006 in Smithfield, north of Cairns
  - Present for 3-4yrs before detection
- Initial Restricted Area was 80 ha
- Four year, \$6.883M program now at least 5 years
- Small but dense infestations in several areas in north Cairns
- Many of these on track for eradication
- New infestations found sporadically over this period
- Now 208 ha in 10 restricted areas
- Technical review will be conducted in 2010/11







Electric ants – *cont...* 

- Head start with this program as we learned a lot from setting up fire ant eradication program
- But not everything is the same different pest, different environment





### Electric Ants – operational protocols

- Delineation with hot dog lures or peanut butter
- Total 6 treatments (3T x 2 years)
- 2 passes surveillance (1S x 2 years)
  - Many forms of surveillance



# **Electric ants – odour detection dog**

- World first electric ant odour detection dog
- Close to 100% sensitivity
- Detect 10 electric ants underground in vial
- Challenges in transition to field
  - Overwhelmed by odour
  - Heat, snakes
- Conducts site inspections
- Clearing previously infested sites
- Increases confidence no ants!



## **Electric ant science**

- Colony room 19 live colonies
  Scientific trials conducted
  - Food preference trials
  - Surveillance sensitivity
  - Canopy traps
  - Post Treatment Indicator Monitoring
  - Environmental monitoring





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# Electric ant – learnings & challenges

- LEARNINGS
  - Include contingencies into the initial budget expect to find more
  - Only a small area of infestation 208ha
    - eradication is achievable, but we have some challenges ahead...
- CHALLENGES
  - Treatment effectiveness detections in previous infested areas
  - Wet weather & humidity impact on baits
  - Public complacency
    - everything stings in NQ "if its small, give us a call"
    - Movement of garden clippings
  - Human assisted movement causing new infestations
  - Declaring pest freedom learning from Hawaii's experience



# Red imported fire ant (*solenopsis invicta*) eradication program





### Red imported fire ants – overview

2001 - present:

- \$215M national cost shared
- Over est. 65,000 colonies in 2001; 556 in 2008-09; 579 current
- Over 1500 tonnes of bait distributed
- 626 staff at peak (2002/03); 191 at present
- Over 1.2 M property treatments conducted\*
- Over 800 000 property surveillances conducted\*
- 11 800 members of the public trained
- 220 volunteers registered and trained
- Identified 71 730 samples
- Currently 3270 businesses on active risk management plans
- Controls on disturbance and movement of high risk materials apply for 98 600 ha

### Successes to date

- low level of infestation in 2010 cf. to 2001
  - est. 65 000 colonies in 2001 over 31,000ha
  - 579 colonies in 2009/10 over 98,600ha
- Doonan (Sunshine Coast) released from restricted area in 2005
- Last north east Brisbane population colony destroyed in 2005
- Support of stakeholders
- Infestation remains contained to greater Brisbane area
- 7 fire ant odour detection dogs
- Operations completed at Yarwun (Gladstone) no RIFA since 2006
  - Pest Free Area proposal has been submitted
- But we've also had lots of challenges...



# RIFA – operational protocols

- Shifting operational protocols since 2001
  - 12 treatments to 9 treatments to 6 treatments
  - treatment 2km around colonies to 500m around colonies
  - Surveillance 2km to 5km around colonies, now minimal surveillance
- Current approved protocol
  - 500m treatment around colonies
  - Surveillance from 500m to 1km
  - 3T x 2years, 1S x 2 years
- 2009/10
  - \$15M 'holding year' contain current infestation whilst remote sensing is developed







# RIFA - 2009/10 status

- Increased budget increase staff
- Contain infestation
  - Treat all infestation detected in 2008/09 & 2009/10
  - Prophylactically treat high risk areas, especially western & Logan
- Conduct research
  - Genetics
  - Odour detection dogs
  - Spread modelling
  - Remote sensing technology
  - Assessment of bait efficacy & new baits
- Emphasis on movement controls, tracings & investigations
- Increased CE activity
- Constructive media strategy
- On track to treat ~47,000ha & survey ~5,000ha

## **Treatment this year**



### Surveillance





# RIFA – detections in 2009/10

- On track for 2nd highest number of detections this year
- Drought has broken in SEQ wettest summer since 2001
- 579 colonies 253 properties 70 suburbs
  - 65 outlier colonies in 19 suburbs
  - 75% colonies in 6 known infested areas
  - 66% outliers detected in Logan area
- Increased CE + constructive media strategy = increased public reporting & increased media = even more increased public reporting
  - Increased staff working outside RA
- Major outliers detected
  - Grandchester 11km from nearest infestation
  - Add 33,000ha to treatment program

# Challenges we face with RIFA eradication

- Never fully delimited continual outliers, still close to known areas
- Sparse infestation large geographical area range of habitats
- Population growth in SEQ = increased commercial & residential land development & increased roads infrastructure development = perfect fire ant habitat
- Complacency maintaining support within community, industry and government
- Maintaining awareness and compliance
- Maintaining funding commitment to achieve eradication
- Feasibility of eradication
- need to find a more cost effective way to eradicate

# **Feasibility of eradication**

- Independent review of program
  - Eradication not feasible with existing technology (& existing budget)
  - Recommended containment, whilst developing remote sensing technology and bait research, with a view to eradication
- Key research to improve feasibility of eradication...
  - Remote sensing trials survey large areas in small amount of time, significant cost savings, earlier detections
  - Genetic analysis social form, relationships between colonies, number of populations, treatment survival or reinfestation, natural or human assisted spread
  - Spread modelling better predict spread & directs resources to greatest risk. Key message: 1 colony = 10 colonies in 18mths
    - Could found up to 100 colonies in 21/2 years (ie another Amberley)
- Benefit: cost analysis 2001: \$8.9B over 30yrs; 2009: \$43B over 30yrs
- In Australia's national interest to eradicate fire ants

# Remote sensing trials

### Thermal Imagery



### Visual Image (Nest through vegetation)

Thermal Image – Nest with peak Temp of 26.8° (+8.6°)





### Remote sensing trials - results

- Trials September to November 2009
  - Captured 2033ha imagery around 243 mounds in 26 sites
  - Promising results
    - Imagery capture cost effective & quick
    - Fire ant mounds detected manually from the imagery
    - Fire ant mounds automatically detected from imagery
    - Detection rates similar to USA trials ie large mounds, open fields
- Technological issues need to be resolved
  - improve data resolution and data alignment
- Aim is to develop remote sensing technology 60% probability of detecting a minimum 30cm fire ant colony at 400ft
- Confident it will be developed and operational by June 2011

# **Genetic analysis – population assignment**



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# Fire ant potential spread



### Fire Ant - 2038 Spread Model







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### Learnings

- Have a clear eradication strategy, then argue for \$\$
  - Develop eradication alternatives with clear benefits/risks
- Should have kept treating 2km around infestations
- Should have done more science, earlier in the program
  - But its never too late to do science!
- Community engagement is essential to ongoing success
- Need to find cheaper and more cost effective surveillance technique
- We can destroy fire ant colonies once they are detected
  - The challenge is finding them (earlier than what we are now)
- Remote sensing, with genetics, with modeling, will deliver eradication
- We have demonstrated we can eradicate an established fire ant population (at Yarwun)

# RIFA case study – Yarwun, central Queensland

- Initial detection March 2006
  - Suspect fire ant reported by worker who had attended awareness training in Brisbane before moving to Yarwun





### Yarwun

# Delineation surveillance and community engagement

- Delineation
  - delimiting surveillance detected 14 colonies on two industrial properties.
  - tracing activities undertaken and trace forward sites inspected
  - other high risk sites in Gladstone area inspected
- Community engagement
  - Local media engaged
  - Local key stakeholders engaged
  - >15 000 yard check report delivered to Gladstone and surrounding shires
  - >800 samples collected via reports from the public

No positive detection of RIFA outside the two industrial properties



Treatment

- 1-2 km treatment zone established (1084 ha)
- seven rounds of treatments applied using Insect Growth Regulator (IGR) between May 2006 and November 2007
- aerial application used for majority of the area

### Surveillance

- 2km surveillance buffer established
- Fire Ant Habitat model applied
- Approval granted by National Consultative Committee to treat in lieu of surveillance in inaccessible areas
- Final pass of surveillance in 2009 found no fire ants

### Genetics

- New incursion not related to Brisbane infestation
- 14 known colonies but genetic samples of foraging ants showed up to 100 colonies

### Yarwun

### Movement controls

Restricted area established

- RA same as Treatment Zone
- Area largely undeveloped
- Large industrial sites with high levels of security
- Products manufactured low to nil risk



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### Pest Free Area – submitted to national committees





### Case study – Community engagement

## The theory

Working definitions	
Information	A one-way relationship in which government delivers information to citizens Government — Citizen
Consultation	A two-way relationship in which citizens provide feedback on issues defined by government Government Citizen
Active participation	A collaboration in which citizens actively shape policy options, but where government retains the responsibility for final decisions Government

Operator Start







40



# BQCC's theory of community engagement



### Tools



# Activities











	To date (RIFA)
Suspect ant reports	18 385
Sample kits sent	40 236
Collections tasked	9 461
Samples submitted	33 975

### **Evaluation**

- Queensland Householder Survey
- RIFA Reward Scheme
- RIFA postcard surveillance
- Training and displays
- EA tracing surveys

