

Slug control: towards better prediction

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Invasive pest slugs

Black keeled slug



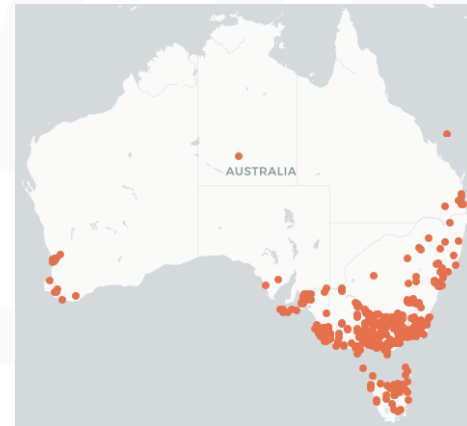
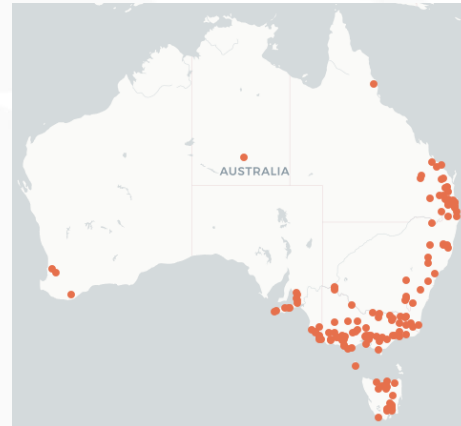
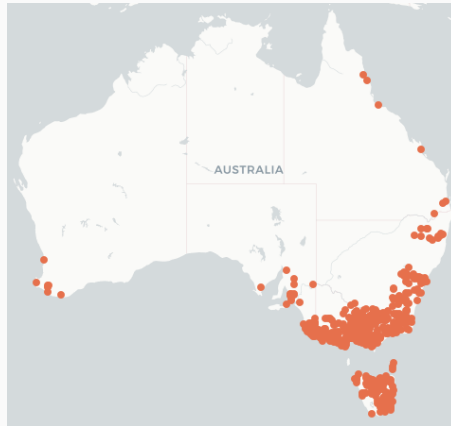
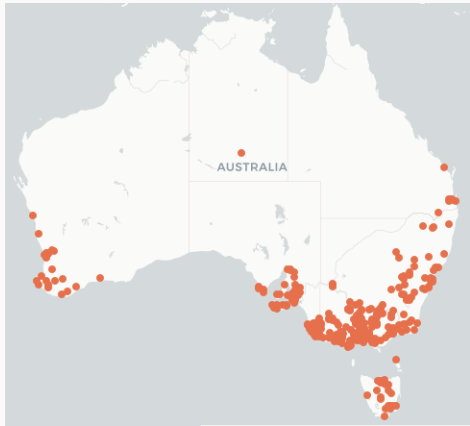
Grey field slug



Brown field slug



Striped field slug



Geographic spread in Australia

Atlas of Living Australia (www.ala.org.au)

Impact on crops

- Cause damage feeding on seeds and seedings
- Minimum tillage, stubble retention & irrigation have increased slug numbers
- Slugs are most problematic in higher rainfall **regions and seasons** in paddocks with heavy, moisture retaining soils
- Surveys indicate an increase in slug damage over 2021-2023



Breeding potential

Slug populations can increase dramatically when conditions are favourable for breeding

Opportunistic breeding once soil moisture > 25%

- Start breeding after 120 - 150 days
- Up to 74 eggs / individual / week
- One BKS can breed for 6 – 8 weeks
- Potential to lay between 300-1000 in their lifespan



Slugs are not a uniform pest – there are all sizes all year round

A slug's weight does not indicate its age or sexual maturity and egg lay, which can make management challenging



30 days old
40 to 300 mg



150 days old
450 mg to 3.5 g

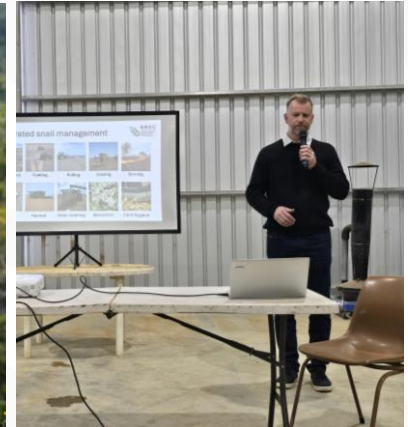
Optimising slug management: enhancing capacity and capability through population modelling and innovative management strategies

GRDC

2023–2027, \$3.65 million

Objectives:

- Population monitoring
- Population model to assess risk
- Increase capacity and capability
- Spring baiting trials
- Slug management manual



Population monitoring



Network of collaborators - 4 farming groups and 2 consultants

Monthly monitoring at 36 sites for three years in SA, VIC, NSW and WA

Data will validate a population model

Slug Life Newsletter



Post-doc: Dr Tom Heddle

Investigating gaps in knowledge about the life histories and ecology of grey field slugs and black keeled slugs

Studies provide valuable data on growth and reproduction rates in different environmental conditions

Data will inform the population model

Preliminary urea trial



Population model

Time Steps:
89

Initial Eggs:
1000

Initial Juveniles:
500

Initial Adults:
100


Carrying Capacity:
10000

Number of Replicates:
100

Temperature Effect Weight:
0 0.5 1

Data Source: Coordinates / CSV

Longitude: 133.7751 **Latitude:** -25.2744



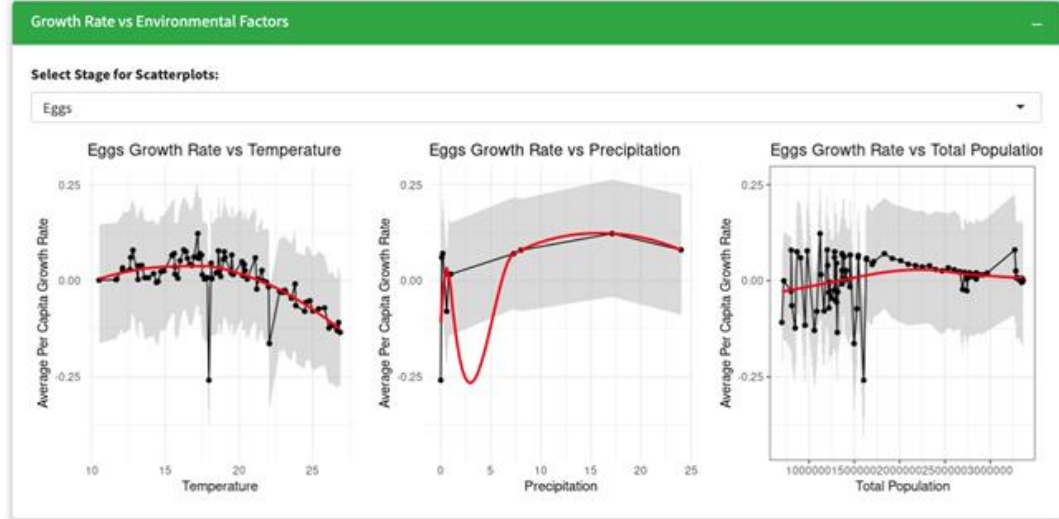
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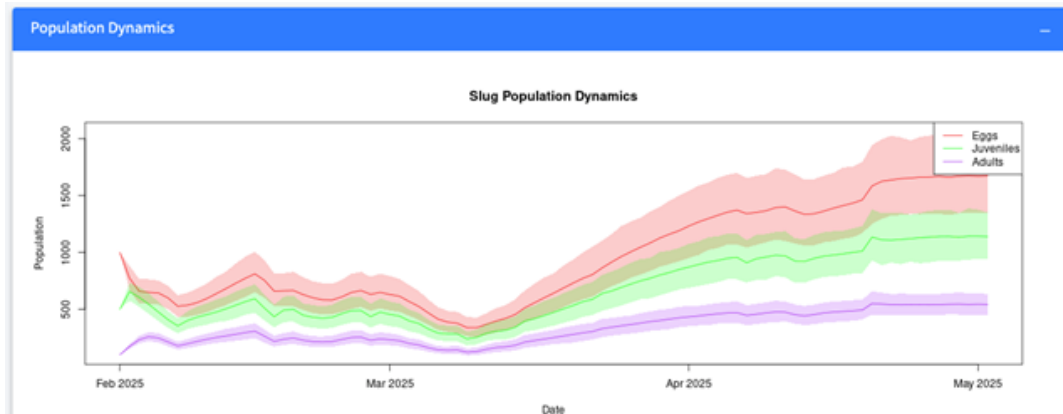
Run Model

Being developed
by James Camac at
the Uni of
Melbourne

Growth rates for eggs, juveniles and adults vs environmental factors



Slug population dynamics



How will spring baiting affect populations?

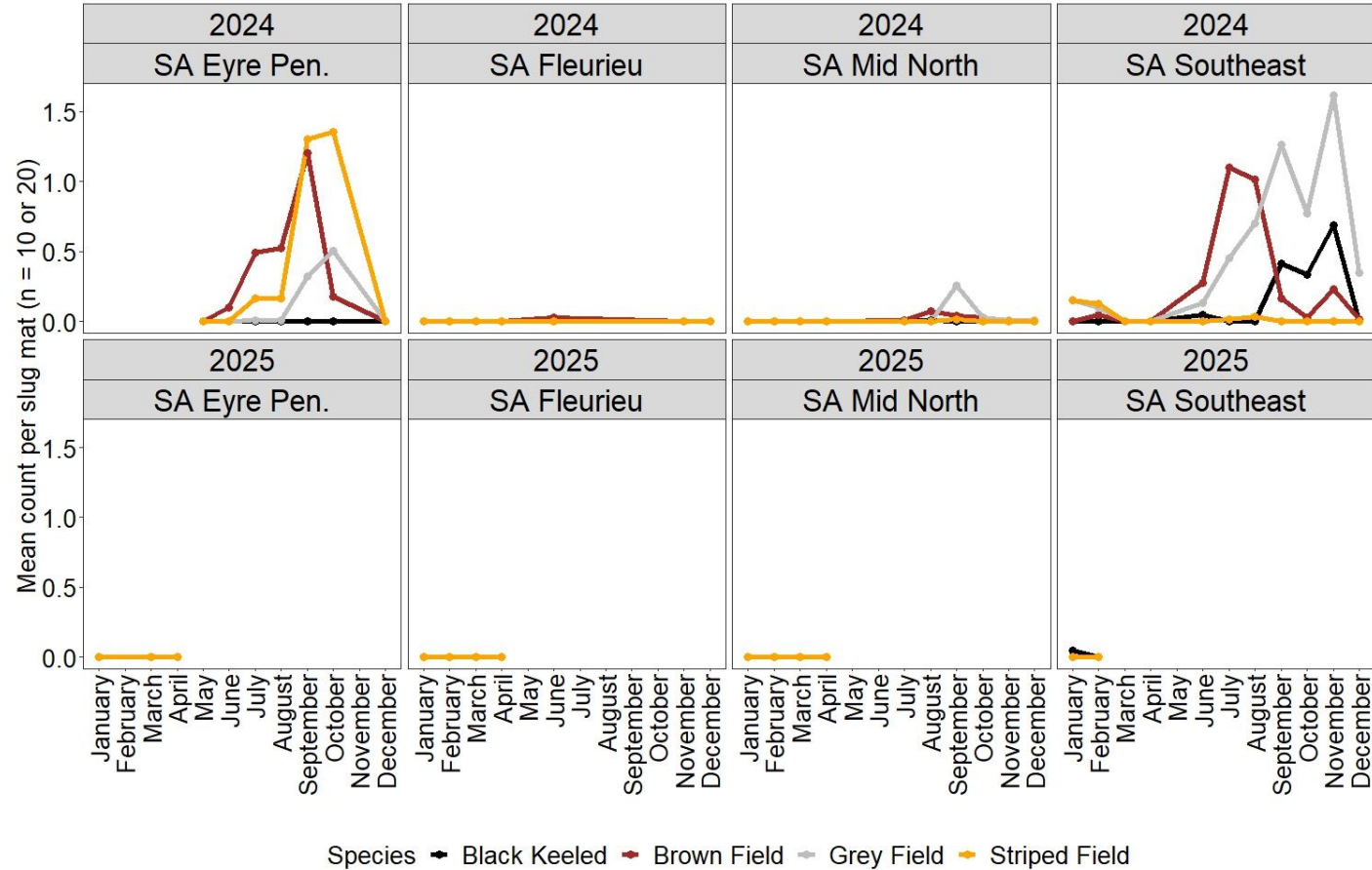
Four spring baiting trials:

- SA (SARDI)
- NSW (Riverine Plains Inc)
- VIC (Birchip Cropping Group)
- WA (Combine Ag Services)

Population assessments after baiting and in the following Autumn

Plant damage surveys to determine the impact of spring baiting on crop damage at sowing

Seasonal slug data in SA 2024-2025



Seasonal advice and management

No slug activity currently in SA except at irrigated sites

Monitoring found that slugs were active across several regions, despite dry autumn and winter conditions in 2024, highlighting the need for proactive slug management

- Economic threshold for grey field slugs is 1 slug per mat before baiting
- Baits should be applied after sowing and before crop emergence when soil is moist and slugs are active
- Even spread of 25-30 baits per square metre for effective control
- Rapid crop establishment and early sowing
- Rolling and press wheel
- Stubble and weed management reduces slug habitat and food sources

...possible by the significant contributions of
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