

SOUTH  
AUSTRALIAN  
RESEARCH &  
DEVELOPMENT  
INSTITUTE  
**PIRSA**

# Snail and slug baiting guidelines:

Michael Nash, Helen DeGraaf, Greg Baker

NOVEMBER 2016



# Snail and slug baiting guidelines:

Information current as of 24 November 2016

© Government of South Australia 2016

## Disclaimer

PIRSA and its employees do not warrant or make any representation regarding the use, or results of the use, of the information contained herein as regards to its correctness, accuracy, reliability and currency or otherwise. PIRSA and its employees expressly disclaim all liability or responsibility to any person using the information or advice.

## All enquiries

Dr Michael A. Nash  
SARDI Entomology  
GPO Box 397, Adelaide SA 5001  
T 08 8303 9537  
F 08 8303 9542  
E [michael.nash@sa.gov.au](mailto:michael.nash@sa.gov.au)

## Key Determinants of Molluscicide Baiting Effectiveness:

- Chance of Encounter
  - Level of individuals' activity
    - Weather
    - Life-stage/health/species
  - Attractiveness of bait
    - Product formulation
    - Alternate food (green plant and stubble)
  - Baits per unit area
    - Application rate (dependent on population density)
    - Uniformity of distribution (spreader performance/calibration for specific bait type)
  - Ground obstruction (stubble, etc. for snails)
- Ingestion of lethal dose
  - Palatability of bait
    - Product formulation
    - 'Hardness' (for snails)
    - Field degradation (e.g. loss of physical integrity)
  - Quantity of bait
    - Bait size
    - kg / ha
  - Adequate active ingredient
    - Formulation
    - Field degradation (possible causal factors: temperature, UV, moisture, microbial)

The effect of these determinants (with the exception of uniformity of bait distribution and field degradation of bait a.i.) are likely to be species specific. This represents a complex matrix of individual x bait x environmental context influences on baiting performance.

## A comparison of the key attributes for the commonly used snail and slug bait products registered for use in Australia agriculture

Products should always be applied as per label recommendations where these are available. This table is provided as a guide only.

| Product                                       | Active Ingredient | A.I. g / kg | APVMA Product No. | Label Rate kg / ha | Pellets / kg | At label rates Pellets / m <sup>2</sup> | Pellet  | Relative hardness <sup>a</sup><br>0= soft<br>10 = very hard | Efficacy 2 weeks after rain <sup>b</sup><br>(35mm) | Ability to be broadcast <sup>c</sup> | Distance spread <sup>c</sup><br>(based on twin spinner machine) |
|-----------------------------------------------|-------------------|-------------|-------------------|--------------------|--------------|-----------------------------------------|---------|-------------------------------------------------------------|----------------------------------------------------|--------------------------------------|-----------------------------------------------------------------|
| Delicia® Sluggoff® Lentils                    | Metaldehyde       | 30          | 60931/0409        | 3                  | 100,000      | 30                                      | flour   | 3.8↑                                                        | Reduced                                            | Fair                                 | 18m                                                             |
| Metarex® Snail and Slug Bait                  | Metaldehyde       | 50          | 58910/49354       | 5-8                | 60,000       | 30-50                                   | flour   | 6.7                                                         | Similar                                            | Good                                 | 22-24m                                                          |
| Metarex® Micro Slug Bait                      | Metaldehyde       | 50          | 68958/59492       | 5 drilled          | 100,000      | -                                       | flour   | 6.1↑                                                        | Reduced                                            | -                                    | -                                                               |
| Imtrade Metakill® Snail & Slug Bait           | Metaldehyde       | 50          | 64990/105219      | 4-8                | 100,000      | 40-81                                   | flour   | 2.2                                                         | Reduced                                            | Fair                                 | 18-20m                                                          |
| Slimax® Broadacre Slug and Snail Bait         | Metaldehyde       | 30          | 68963/59506       | 3-5                | 50,000       | 15-25                                   | bran    | 2.6                                                         | Similar                                            | not tested                           | not tested                                                      |
| SlugOut® All Weather Slug and Snail Bait      | Metaldehyde       | 18          | 49324/58633       | 10                 | 85-93,000    | 85-93                                   | granule | 8.7↑                                                        | Reduced                                            | Good                                 | 24m                                                             |
| Meta® Slug and Snail Pellets                  | Metaldehyde       | 15          | 49568/100778      | 5-7.5              | 24-27,000    | 18-21                                   | bran    | 0.9                                                         | Reduced                                            | Poor-fair*                           | 20-24m                                                          |
| Sluggo® Slug and Snail Pellets (2.5 mm)       | Metaldehyde       | 15          | 46023/103982      | 5-7.5              | 21-26,000    | 11-20                                   | bran    | 1.5                                                         | Reduced                                            | Poor-fair*                           | 20-24m                                                          |
| Sluggo® Slug and Snail Pellets (4 mm) φ a     | Metaldehyde       | 15          | 46023/56819       | 5-7.5              | 10-11,000    | 5-8                                     | bran    | 0.6                                                         | Reduced                                            | Poor*                                | not tested                                                      |
| Pestmaster® Snail & Slug Pellets (2.5 mm) φ a | Metaldehyde       | 15          | 51102/56581       | 5-7.5              | 26-32,000    | 13-24                                   | bran    | 0.8                                                         | Reduced                                            | Fair*                                | 20-24m                                                          |
| Pestmaster® Snail & Slug Pellets (4 mm) φ a   | Metaldehyde       | 15          | 51102/56581       | 5-7.5              | 9 -10,000    | 5-7                                     | bran    | 0.7                                                         | Reduced                                            | Poor*                                | not tested                                                      |
| Multicrop Multiguard® Snail and Slug Killer   | Iron chelate      | 60          | 60104/0905        | 5-16               | 18-24,000    | 9-38                                    | bran    | 0.9                                                         | Reduced                                            | Poor-fair*                           | 20-22m                                                          |
| Eradicate® Snail and Slug Killer              | Iron chelate      | 60          | 68634/58804       | 5-16               | 25-26,000    | 13-39                                   | bran    | 0.9                                                         | Reduced                                            | Fair*                                | 20-24m                                                          |
| Mesurool® bait φ b                            | Methiocarb        | 20          | 33274/1209        | 5.5                | 28-30,000    | 15-18                                   | bran    | 0.5                                                         | Similar                                            | Poor*                                | not tested                                                      |

## Explanatory Notes

Data from testing conducted by SARDI unless stated, updated by MA Nash Nov 2016.

ϕ Extra technical comment by Protech Consulting Pty Ltd Jul 2016

The full pesticide label must be consulted for full and up to date application instructions. Observe all restraints and withholding periods.

Pellets / m<sup>2</sup> applied varies depending on the rate (kg/ha) applied by the number of pellets/kg and the pellets ability to remain intact as determined by hardness.

ϕ a Registered label rate is 5g/m<sup>2</sup>. Label recommendations for bran based baits can be misleading hence the rate used in broad acre is often 5 - 7.5 kg / ha.

ϕ b Registered label rate is 5.5kg ha or 11-22kg/ha. For most infestations apply low rate.

a/ Hardness was assessed by SARDI using pellets of a standard size (2-3mm) except where pellets were smaller (1-2mm) as indicated by †. Results will vary depending on size and batch.

b/ Efficacy 2 weeks after rain was assessed by SARDI using a bioassay with non-significant changes in snail mortality reported here as similar (Nash *et al.* Feb 2016) GRDC Update papers.

\* Field and lab results indicate these products break up, hence spreadability varies depending on the hardness and length of pellet from each batch.

c/ Data obtained from Ashley Wakefield spreader trials is presented as provided. Always calibrate and check bait distribution for individual situations.



## Methodology to determine bait efficacy after rain

Bait products were weathered by spreading approximately 50g of each on the surface of soil (Warooka red loam) in large planter trays (400 x 300 x 120 mm). Trays were placed on benches in an exposed position at the Waite Campus, Urrbrae, SA. Various bait products were assessed by exposing to rainfall (>35 mm) over 14 days in 2015 and 2016, with products exposed on two or three different occasions. On each exposure, for comparative purposes, baits were exposed to the same environment but under a rain shelter to exclude rainfall. Pellets were removed directly after exposure for efficacy testing.

Italian snails (*Theba pisana*) were used to test the efficacy of molluscicidal baits once they had been exposed to the environment on soil. Five snails, 8 replicates per treatment (n=40) were added to each test arena with eight baits at the completion of weathering periods. Baits were removed 3 days after initiation of the experiment due to the formation of mould, which was scored as present/absent and the number and condition of pellets remaining recorded. Snail mortality was assessed 5 days after bait was removed. Combined mortality data (%) from the experiments was assessed for significant differences between 'exposed to rain' and 'exposed to dry' using a Generalised Linear Model (Poisson distribution with log link). Rainfall resulted in a significant reduction ( $X^2_{16} = 658$ ,  $P < 0.001$ ) in efficacy that interacted with product, hence significant differences between individual products were tested using Honest Significance Difference ( $P < 0.05$ ), but due to variability we were not able to detect significance when less than a 25% effect size.

## Other resources

- <http://ipmguidelinesforgrains.com.au/pests/slugs-and-snails/>
- <http://www.grdc.com.au/Resources/Factsheets/2013/03/Slug-control-identification-and-management>
- <https://grdc.com.au/Resources/Factsheets/2012/09/Snail-Management>
- <https://grdc.com.au/Research-and-Development/GRDC-Update-Papers/2016/07/New-insights-into-slug-control>
- <http://www.grdc.com.au/Research-and-Development/GRDC-Update-Papers/2016/02/New-insights-into-slug-and-snail-control>
- <https://asnugblog.wordpress.com/2015/07/03/fact-sheet-grey-field-slug/>
- <https://asnugblog.wordpress.com/2015/07/03/fact-sheet-back-keeled-slug/>