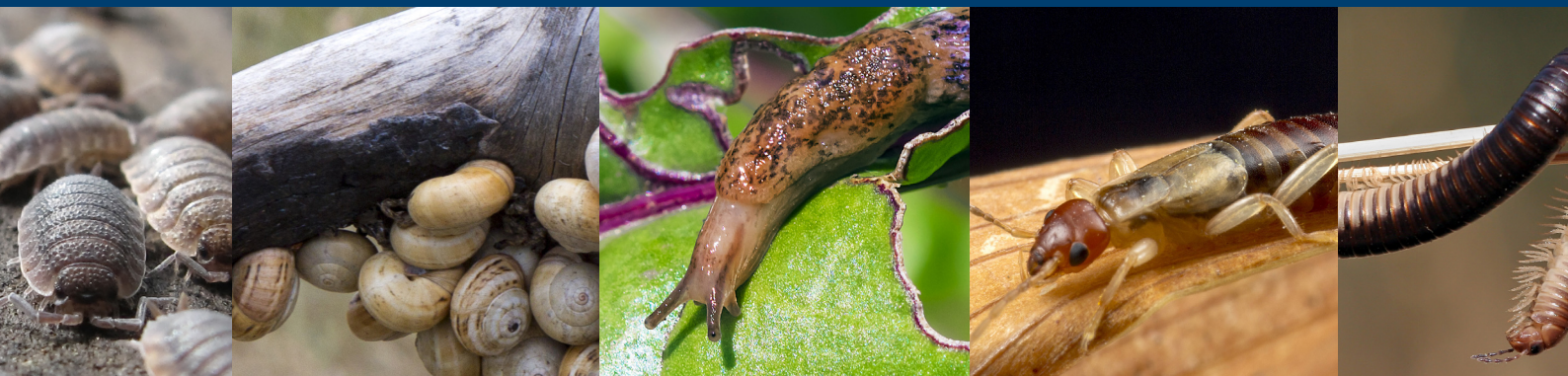


TRANSCEND[®]

DUAL BAITING SYSTEM





IMTRADE

Imtrade Australia is an Australian owned agricultural chemical and R&D company.

Established in 1981, the company operates a custom-built manufacturing and laboratory facility in Kwinana, Western Australia. Research & development, product manufacturing and quality control are conducted from this facility, with distribution warehouses located in all states nationally.

Imtrade Australia supplies quality products designed for the broadacre, horticultural, turf and pasture markets.



Increased pressure due to no-till practices



**Imtrade Transcend®
and Earwig 2018**

Invertebrate pests of Australian Broad-acre cropping have generally arisen from incursions onto the Australian mainland by foreign species introduced via various human activities. Whilst a number of these species have been present in Australia for some time without having a significant effect on production systems, it has been the recent adoption of moisture and stubble retention based agro-systems that has seen the pests rapid rise to prominence in some regions.

The Australian climate dictates that agricultural practices that prevent moisture loss, improve water infiltration, build organic matter and soil structure and prevent the erosion of topsoil via wind and water are of paramount importance. Recent trends in climate shift are also further influencing these practices as rainfall and temperature trends become more sporadic. Since the mid 1990's, the adoption of minimal and no-till practices has seen rapid uptake across most broad-acre cropping regions. These systems usually involve one or more of the following practices; stubble retention, direct drilling, minimal/no tillage, minimal/no burning, controlled trafficking, chemical fallows and harvest chaff management.

All of these practices generally equate to high organic matter/detritus layers on the soil surface in various stages of decomposition, more friable soils through compaction minimization, no soil disturbance/inversion, removal of unwanted out-of-season vegetation and more retained moisture. Since these practices have been adopted, there has been a clear shift in the abundance of pest species, in particular in the prevalence and distribution of Snail & Slug, European Earwig, Portuguese Millipede and various Slater species.

All these species have been highly advantaged by the adoption of these newer practices, as the traditional cultural practices utilised in broad-acre agro-systems was naturally disadvantageous to these pests. Mechanical manipulation of soils, burning and general removal of bio-mass removed sub-soil moisture, promoted compaction, disturbed invertebrate refuges, eggs and dormancy stages, effectively providing an unfavorable habitat and disrupting the life-cycle which prevented rapid population explosions.



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**Egg laying activities
have been linked to
recent studies on the
effects of humidity.**

Snails & Slugs

There are four Snail species of significance in Australian Broad-acre cropping, with the majority first being noted in the 1920's.

Snails and Slugs damage newly emerged seedlings of most broad-acre crops, with Slugs also damaging sown legume seeds before emergence. Additional to early season damage, Snails pose a contamination risk to harvested commodities in the spring/summer, as they move up vegetation during this period in order to enter their dormancy phase over the summer months. This leads to mechanical issues in harvesters and potential commodity contamination which can effect receipt.

Recent data indicates that humidity appears to be the trigger for dormancy break and egg laying activities in Snails, with sub-soil moisture at 50-60cm the trigger for dormancy break in Slugs. Baiting activities conducted around this trigger-point appearing to be the most effective for long-

term population control. Baiting activities prior to/at sowing also seem to be more effective in preventing crop damage than post-sowing baiting programs.

Snails and Slugs are not attracted to baits, with consumption of bait products being solely reliant upon encounter. Thus the number of baits per square meter becomes imperative for effective control operations.

The four species of snail are;

- Conical or Pointed Snail (*Cochlicella acuta*)
- Small Pointed (conical) Snail (*Prietocella barbara*)
- White Italian Snail (*Theba pisana*)
- Vineyard or Common White Snail (*Cernuella virgata*)

There are two major introduced Slug species of significance in Australian broad-acre cropping, with records noting *Milax* incidence in the 1820's.

The two species of slug are;

- Black Keeled Slug (*Milax gagates*)
- Reticulated Slug (*Deroceras reticulatum*)



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**"Imtrade Transcend®
is class leading in
weather resistance
maintaining
integrity for 4-8
weeks in the field"**



SLATERS

In Australia there are three species of Slater **associated with damage to broad acre crops**

Imtrade Transcend® provides protection from all three Slater species and will assist in protecting your young crops from attack. Before Imtrade Transcend® it was extremely difficult to control insects such as Slaters and Earwigs among broad acre crops, but a solution has finally been found in the form of a dynamic pellet bait.

Earwigs, Slaters & Millipedes

There is one species of Earwig, one species of Millipede and three species of Slater associated with damage to broad-acre crops in Australia.

These are;

- European Earwig (*Forficulina auricularia*)
- Portuguese Millipede (*Ommatoiulus moreletii*)
- Pill Bug (*Armadillidium vulgare*)
- Common Slater (*Porcellio scaber*)
- Flood Bug (*Australiodillo bifrons*)

These species have only recently become a major pest of broad-acre crops in Australia, they tend to cause feeding damage to young, newly germinated crops. Similarly to Snails and Slugs, some species can also be a harvest contamination issue when large numbers are present in the crop canopy. Additionally, recent trials have shown that these species are consuming Metaldehyde bait products intended for Snails, apparently without any ill-effect (Fig 1).

Being highly mobile compared to Snails/Slugs, Earwigs, slaters and Millipedes are able to encounter baits much more rapidly, and as there is no ill effect, they tend to consume baits in their entirety before Snail/Slug encounter can occur. With snail/slug control reliant on the number of baits per square meter, this feeding behavior of Earwigs, Slaters and Millipedes significantly reduces the efficacy of the Snail baiting program.

The triggers to feeding and population dynamics of these invertebrates is poorly understood, however there seems to be some correlation between activity and the prevalence of moisture. There are currently very limited control options available for the control of these species in broad-acre agronomics, with some of the available options considered limited in their usefulness and efficacy.

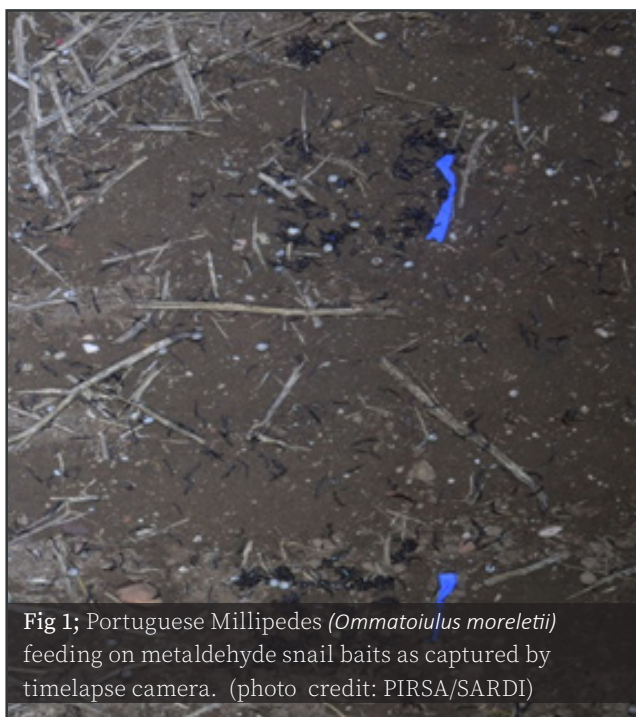


Fig 1; Portuguese Millipedes (*Ommatoiulus moreletii*) feeding on metaldehyde snail baits as captured by timelapse camera. (photo credit: PIRSA/SARDI)



The Solution:

Imtrade CropScience, in collaboration with growers and researchers has developed a unique, Australian designed pellet bait for the control of Snails, Slugs, European Earwigs, Slaters and Portuguese Millipedes. Imtrade Transcend® Molluscicide & Insecticide provides growers with an effective and efficient baiting option designed to fit seamlessly into current broad-acre operations so growers do not need to change their practices or machinery to accommodate the new technology. Transcend® has delivered a game-changing solution to growers, effectively reducing early season crop damage and aiding in population control, reducing harvest-time contamination.

Highly effective on Snails and Slugs

The small, compact pellet provides between 40 and 80 bait points per square meter (dictated by use rate) which is considered effective for Snail and Slug population control. The bait formulation demonstrates class leading rainfastness, maintaining its physical integrity for 4 – 8 weeks under field conditions. This durability

means that a single pass with Transcend® can persist longer in the field and may remove the requirement for secondary bait applications in a season, which is often the case with low durability Snail baits.

Highly effective on Slaters, Millipedes and Earwigs

The occurrence of these invertebrate species often coincides with Snail and Slug activity in Australian broad-acre cropping. Transcend® is highly palatable to these species, delivering a lethal dose at very small consumption rates (Table 1). While this is advantageous to preventing crop damage, it also addresses the issue of these species consuming Snail/Slug baits. Even though ingestion is required for efficacy, the amount consumed to cause lethality is low, leaving the majority of the bait available for Snail/Slug encounter. The efficacy of Transcend® on these species is exceptional, with controlled experimental designs indicating 100% control (Table 2).

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“Growers do not need to change their practices of machinery to accomodate Imtrade Transcend”



Use of Imtrade Transcend® in Canola is pending registration with the APVMA.

Table 1; The weight of baits applied per treatment per arena in controlled laboratory assays and the mean consumption of baits 3 DAT by Common Slater (*Porcellio scaber*), European Earwig (*Forficulina auricularia*), and Portuguese Millipede (*Ommatoiulus moreletii*).

No.	Treatment	No. Pellets (per arena)	Slater		Earwig		Millipede	
			Applied Wt mg	Consumption mg	Applied Wt mg	Consumption mg	Applied Wt mg	Consumption mg
A	Transcend®	2	26	1.8 ^{bc}	26	6 ^d	30	10 ^c
B	Transcend®	4	47	1.9 ^{bc}	53	6 ^d	60	10 ^c
C	Transcend®	8	91	0.2 ^c	106	5 ^d	116	11 ^c
D	Mesurol	2	55	6.5 ^{ab}	75	23 ^c	101	15 ^c
E	Metakill	4	43	0.0 ^c	53	51 ^b	52	49 ^b
F	Placebo	4	61	11.2 ^a	63	62 ^a	77	72 ^a
P Value			ana	<0.001	ana	<0.001	ana	<0.001
LSD				5.07		8.02		6.10

Means within the same cell with a letter in common are not significantly different (P>0.05) ana – analysis not applicable
Consumption = subset dw – recovered dw
10 individuals present per arena

No.	Treatment	No. Pellets (per arena)	Slater CM%	Earwig CM%	Millipede CM%
A	Transcend®	2	93 ^a	100 ^a	100 ^a
B	Transcend®	4	100 ^a	100 ^a	100 ^a
C	Transcend®	8	98 ^a	100 ^a	100 ^a
D	Mesurol	2	95 ^a	97 ^a	94 ^a
E	Metakill	4	56 ^b	45 ^b	2 ^c
P Value			<0.001	<0.001	<0.001
LSD			23.3	5.45	13

Means within the same cell with a letter in common are not significantly different (P>0.05) CM% = (1- Alivetreatment/ Alivecontrol)*100

Table 2; Corrected Mortality of Common Slater (*Porcellio scaber*), European Earwig (*Forficulina auricularia*), and Portuguese Millipede (*Ommatoiulus moreletii*) expressed as a percentage reduction from the untreated placebo group 8 DAT as calculated using Abbotts formulae.

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