

Why use Iron EDTA complex baits v's Metaldehyde / Methiocarb

What baits are available in Australia?

There are basically four types of slug and snail baits available in Australia;

1. Cheap metaldehyde baits made by the so called "dry process" with usually 1.5% metaldehyde as the active ingredient
2. Expensive imported metaldehyde baits made by a wet paste process containing 3-5% metaldehyde
3. Methiocarb baits
4. Iron EDTA Complex baits.

Metaldehyde baits

There are two types of metaldehyde baits available in Australia, imported baits such as Meterex and Slugoff, and Australian baits such as Blitzem, Defender etc. Imported baits use wet process manufacturing which leads to baits which are suitable for slugs and wet soils, whereas the Australian manufactured baits are made by a dry process and perform better in drier conditions than in very wet conditions.

There are several claims for the imported baits which need closer consideration since they have been questioned in the available scientific literature. It is often claimed that "the more baiting points the more effective the bait". This assertion has recently been challenged by a leading scientist at the prestigious Long Ashton research Station in the UK. He claimed that 2.5mm pellets spread at a rate of 32 pellets per m² are the most effective application rate. Both Meterex and Slugoff recommended rates are considerably more than 32 baits per m² and they are much smaller than 2.5mm pellets. Part of the problem with small pellet sizes is that they can fall into small cracks in the soil or between soil aggregates and become inaccessible to slugs and particularly to snails. It is possible that small pellets are more effective under some circumstances but it is certainly not always the case.

In Europe the use of metaldehyde pellets is restricted because it has been found that excess use of this active ingredient has led to levels in some waterways 10 times the allowable concentration*. The application rate of Meterex at 5 kg/ha, (the recommended rate for Meterex in Australia), is higher than is allowable in Europe. This has led to a new 4% metaldehyde product with a recommended application rate of 5kg/ha. This product is not registered in Australia. Another problem in Europe with metaldehyde is that, because of its potential toxicity, its use near waterways is now prohibited. The makers of Meterex likewise recommends use of non-metaldehyde molluscicide for use near waterways. In Australia there is no restriction on the use of metaldehyde baits near waterways but, in common with Europe there are withholding periods for food crops.

Methiocarb baits

Methiocarb baits are more expensive than Australian manufactured metaldehyde baits and iron EDTA complex baits. They perform better than 1.5 per cent metaldehyde baits and similar to iron EDTA complex baits depending on the situation. Methiocarb is a scheduled poison and its use is restricted on food crops.

Iron EDTA complex baits

These baits have been particularly developed for Australian snail pests. **ERADICATE** is one of a family of molluscicides developed by scientists associated with The University of Melbourne and La Trobe University. The product is based on molecular wrap technology in which the active ingredient is an iron EDTA complex. Molecular wrap technology can be used to produce an effective snail, slug and woodlice killer which is of low toxicity to non-target animals such as dogs, cats, birds, earthworms. Unlike the active ingredient in baits based on metaldehyde or methiocarb, iron EDTA complex are not a scheduled poisons, and are accepted as an allowable food input.

Extensive scientific trials have shown that **ERADICATE** is effective on all Australian pest snails and slugs. Slugs and snails eat **ERADICATE** and move away from the bait and usually die out of sight. Whilst they do not die immediately they cease feeding. The active ingredient is thought to work by attacking the blood stream of the slug or snail leading to suffocation. The effectiveness of any Snail and Slug Killer depends on numerous factors including the mollusc species, temperature, humidity and attractiveness of the bait as well as the bait formulation. In over 50 trials **ERADICATE** has been shown to be more effective compared with a number of metaldehyde baits with 1.5% active ingredient. In all cases **ERADICATE** gave higher kill rates.

Although only two products based on iron EDTA complex are available in Australia, products based on iron phosphate/EDTA active ingredients are common place in Europe, USA and Canada. These are based on technology which is similar but different from the patented technology used in **ERADICATE**. Extensive research, often sponsored by the suppliers of metaldehyde has been under taken on the toxicity and fate in the environment of various iron compounds and various iron EDTA complexes. This is in addition to the extensive scientific literature developed as a result of the use and potential use of some iron EDTA complexes in food stuffs, (including work by Kelloggs for inclusion of iron EDTA complexes in breakfast cereals), and in medical applications to treat anaemia due to iron deficiencies which effects about 60% of the world's population. The results of these studies may be summarised by noting that there was no significant harm to the environment and human health. Furthermore, provided label instructions are adhered to, there is no significant potential to cause harm to non target animal or plant species.

Despite claims by various organisations and interest groups there is no evidence for death of family pets due to iron poisoning. In comparison products based on metaldehyde have been responsible for literally hundreds of dog deaths in Australia. **ERADICATE** is toxic to snails, slugs and woodlice and whilst there is some evidence that excessive consumption of Iron EDTA complex baits leads to vomiting and diarrhoea these effects are probably due to the alkaline nature of the product. Reports by some veterinary publications claiming toxicity due to iron poisoning are based on invalid assumptions, incorrect calculations and flawed scientific reasoning. There is circumstantial evidence of poisoning, not death, but this has not been conclusively linked to consumption of iron.

In Europe and USA, products based on iron phosphate and EDTA have been investigated for the potential threat to earthworms. These trials show that at very high dose rates there is a potential to reduce earthworm growth rates but the results were not statistically significant. Indeed, the only significant conclusions from the trials were that earthworms can remove snail and slug pellets from the soil surface reducing their effectiveness. There is no evidence what so ever to support the claim



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made by some interest groups, that iron EDTA pellets when used as molluscicides, are toxic to earthworms. The removal of pellets from the soil surface has been investigated and it appears that it is less of a problem with iron phosphate/EDTA pellets than with metaldehyde pellets, However, this observation may be a consequence of the smaller size of the metaldehyde pellets used in studies rather than any intrinsic property of the active ingredient.

Summary

The properties of the various types of snail and slug pellets on the Australian market are summarised below;

	Metaldehyde Dry Process	Metaldehyde Wet Process	Methiocarb	Iron EDTA complex
Typical cost per kg	\$1.30 - \$2.00	\$8.00 - \$11.00	\$5.00	\$3.00 - \$3.50
Effectiveness	Poor / Moderate	Good	Good	Good
Toxicity to dogs, birds and other non target species	High	High	Very High	Low
Danger to water supply	Moderate	High	?	Low
Withholding period on food crops	Yes	Yes	Yes	No
Active ingredient	Scheduled Poison	Scheduled Poison	Scheduled Poison	Food Ingredient

From this table the answer to the question "Why use iron EDTA complex baits rather than metaldehyde or methiocarb baits?" is obvious.

* Metaldehyde in drinking water www.getpelletwise.co.uk



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