

## The madness of mouse management

Mouse plagues have occurred sporadically in Australian cropping areas for more than 120 years. They occurred when we grazed 170 million sheep and before we adopted minimum tillage or stubble retention, but risks have probably been increased by higher yields in crops (more spilled food) and with more intensive cropping cycles. Overlying this are weather and other seasonal events such as summer rains that support early weed growth and breeding success. Mice come and mice go, so it is necessary just to manage plague events when they occur unexpectedly. During 2021 the nation faced one of the worst mouse eruptions in 100 years. For next season we face a second La Nina pattern reminiscent of the 2010-11, when mice were also a big problem.

Major mouse events are not easy to predict reliably. Conditions can be favourable, yet no plague erupts and likewise conditions can look poor for mice, yet they pop up locally with little warning. It is not the fault of farmers and no modelling or attempts to predict plagues by counting mice in single paddocks is sufficiently reliable to accurately plan a regional situation. The problem can be variable between paddocks, farms and regions, so it is essential for landholders to stay vigilant. Mice can build up early and then sometimes die out naturally before planting, with no bait needed. Just counting mice in the absence of assessing likely timing of crop risk is not the right action. Alternatively, mice may rise to modest numbers that then persist through the crop cycle to damage several stages of crop development, but yet not a "plague". Most farmers have seen and experienced these events.

With over 24 years of effective mouse management, ACTA has learned to maintain large stockpiles of finished product (MOUSEOFF®), sterilised grain and chemicals to be able to react

fast to any unexpected needs in normal years. Sometimes these stockpiles are unused for several seasons. ACTA production capacity has always been in excess of needs but once stockpiles are used we rely on our supply chain for grain sterilisation and chemical supplies. In big mouse years, as in 2021, we have needed to air freight emergency supplies of chemical due to global delays in shipping.

### MOUSEOFF® a proven performer:

ACTA developed MOUSEOFF® zinc phosphide (ZP) bait in 1997 to treat an emergency in Victoria. We completed full registration in 2001, at the highest internationally accepted dose rate of 25g of ZP per kg of bait.

MOUSEOFF® has been the predominant product used in the last 24 years and in the vast majority of situations, this bait has provided near 100% control of mice from one application at 1 kg/ha.

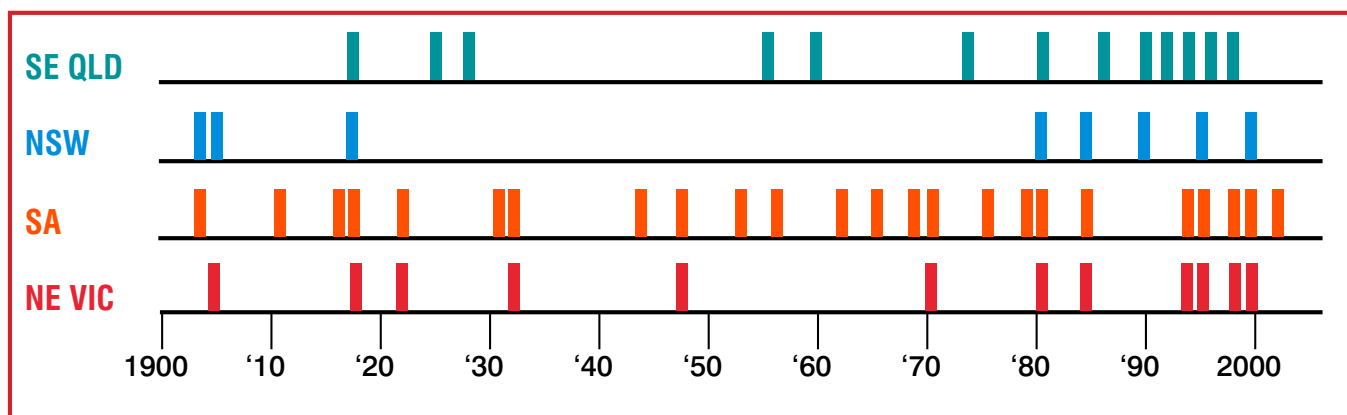
**Recent public claims that this bait and any others of similar specification "kills only 50% of mice" are totally incorrect.**

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## Mouse infestations have occurred sporadically in different states for many decades



These comments were repeated in a series of industry seminars and on websites. The presentations referred to unreleased “data” and significant speculations. Neither the protocols for tests or results of these studies have been disclosed fully despite several written and verbal requests.

After a test on three farms it was publicly stated that the high dosed baits killed “>80-90% of mice 75% of the time”. While no peer review has been given, it was recommended that dose rates of chemical on bait should be doubled from 25g/kg up to 50g/kg. This massive increase is to twice international standards for this type of product. It was claimed that this dose rate would overcome the need of some farmers to rebait but we have seen no data to show that the risk of rebaiting is materially changed. This same research group also promoted the potential of immuno-fertility control as a means to prevent mouse plagues but the project was abandoned after costing about \$80m over 20 years.

**We would urge grain growers to look closely at the value of the research done in mouse management and the effectiveness of how their funds and levies are being spent in this field.**

### Why change dose rate?

What is the argument that has lead to a call to double chemical use? In addition to increasing the cost of mouse management, what are the consequences of going in the direction of high dosed baits?

We were advised and it has been

presented in seminars during 2021, that CSIRO had done gavage studies (directly putting the ZP into lab and field mice stomachs). Their studies led them to question the published figures for the LD<sub>50</sub> dose in mice (on which most products are based globally). It was claimed that Australian mice need more chemical to kill them.

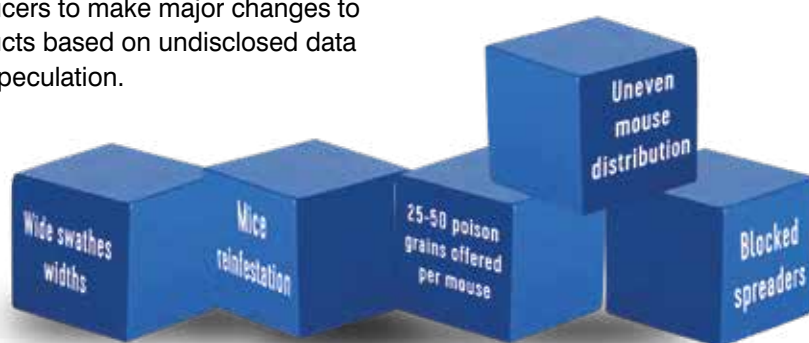
It was then claimed that mice collected from areas, where mice were regularly baited with ZP required more chemical to be killed than mice obtained in where bait had not been used regularly. This suggested that mice were becoming more resistant to the chemical. This would be big news IF TRUE but we wonder how one collects mice in a regularly baited area, and whether such mice have ever been exposed to bait.

Perhaps there are additional differences between mice collected at different times from different places that would cloud these conclusions? The statistical validity of the data has not been disclosed. If it is not significantly different, then the difference should not be claimed. It is understandably difficult for producers to make major changes to products based on undisclosed data and speculation.

It was also claimed that well fed mice required more chemical to kill them, or that such mice take a little longer to die but still no data or statistical proof. Again, the gavage results between groups were not significantly different.

Next it was speculated that, if a mouse was exposed to a sub-lethal dose of ZP that it would “never” eat such a bait again. Thus, it was claimed publicly that, a mouse eats one grain of bait or nothing. Anyone with a bucket, 10 grains of bait a mouse (and an ethics permit) can quickly show otherwise. A mouse quickly eats several grains in the 1-3 hrs before the first one or two grains kills it and we offer up to 50 toxic grains per mouse (see later).

It is invalid to assume and actively promote that a product dosed at 25g/kg kills only “half” the mice. The reason is that even when 1kg/ Ha is applied to a very serious mouse infestation of say 1000 mice per hectare (more typically 200-500 mice/ha), there are still 22 to 25 such treated grains (and up to 50 toxic gains) offered per mouse. Any one or two of which are lethal.



However, there is evidence in rats and other rodents for “learned aversion” to any acute (quickly acting) chemical that induces some malaise before death. Such an effect has been seen in rats in Hawaii where regular and repeated applications of ZP pellet baits are made. This can cause aversion and is why regular applications to the same population may lead to reduced effectiveness. But in our situations there are usually years between applications in any area. The use of ZP baits for mice in Australia is a sporadic event, so such an aversion is unlikely to progress between generations. But it has been claimed as a certain event in all situations regardless. This is speculation and extrapolation.

Next it was calculated that each grain of wheat bears an approximate LD<sub>50</sub> dose of toxin. This is roughly correct. With 25g of ZP/kg of product and about 22,000 to 25,000 grains per kg of bait, the dose per grain is about 1 to 1.2 LD<sub>50</sub> equivalents for a 20 g mouse, using published estimates of toxicity. Despite the fact that we offer up to 50 grains per mouse (for a mouse density of 500 mice /Ha) it was extrapolated that all current products “only kill 50% of mice” or are “50% effective” as each grain carries a 50% lethal dose on average. Landholders who have used these products successfully for 24 years would hardly have re-used them if they were ever 50% effective! This would be useless and we would not sell nor would merchants provide such a product either.

This public claim was often repeated, was presented in customer forums and was published on both CSIRO and GRDC websites and fact sheets. They also published that the dose rate was 25mg/kg but we will ignore this 1000 fold error for now, as we presume it was a typographical error. It was incorrectly claimed that ZP baits are dangerous in houses because they release phosphine (PH<sub>3</sub>) gas on degradation because this gas was used in trench warfare in WW1. It was Phosgene gas (CCl<sub>2</sub>O) that was used in the trenches and we had to correct this lest people feared that they would be killed if using the product. Similarly, a recommendation to place corn flour around mouse holes to check activity was also poor advice, as flour will attract mice, so activity will be over estimated. We used talc or cement dust.

**We have to correct this misadvice or once established such folk lore takes years to erase.**

**So, in summary it is claimed that our mice are more resistant to zinc phosphide in stomach dosing tests, that ‘ZP exposed mice’ are more resistant, that well fed mice take more toxin to kill them and/or longer to die and that current products kill only 50% of mice as the mice will eat only one grain and never take another. Therefore, it was concluded that the dose of bait should be doubled.**

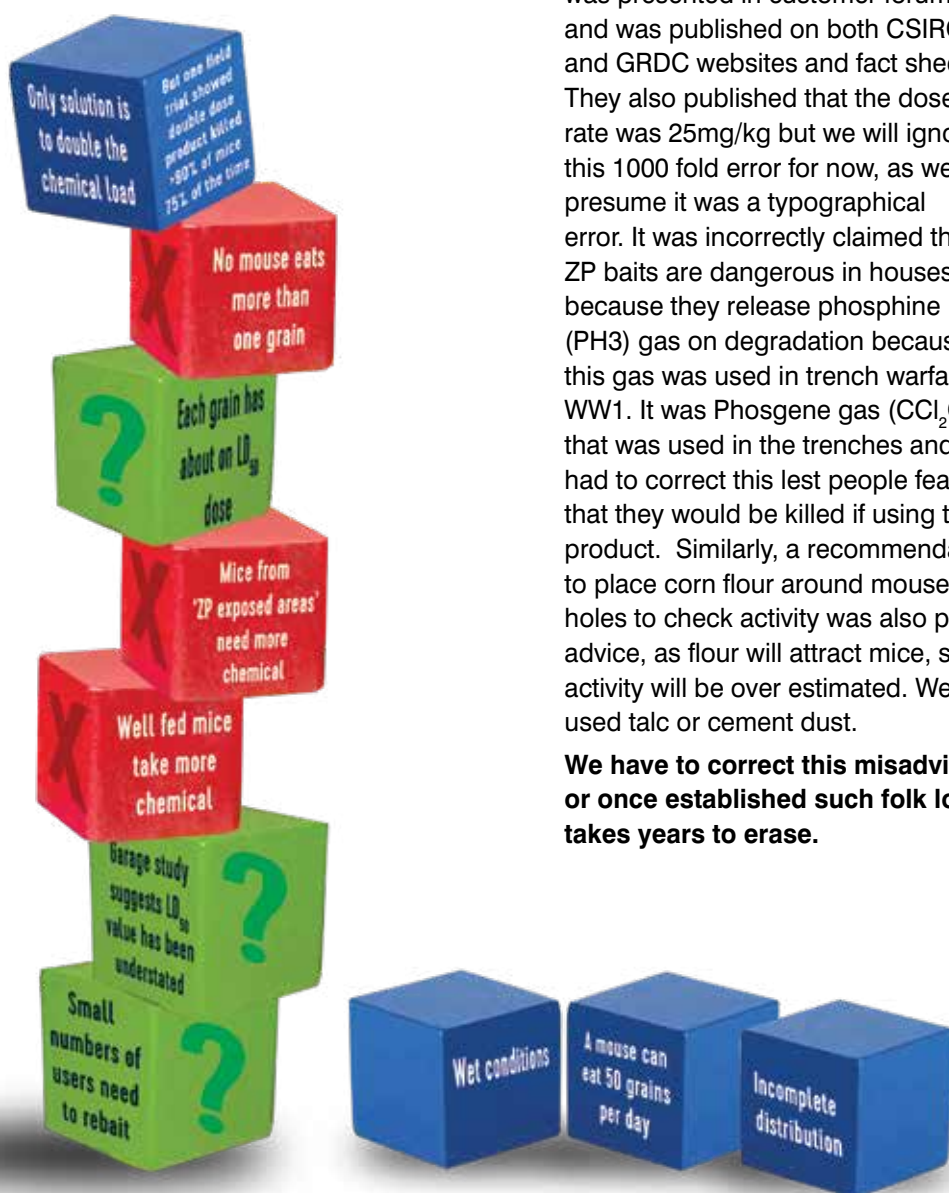
A recent “trial”, according to industry presentations, did not show that doubling the dose reliably killed 100% of mice (‘it killed 80-90% of mice more than 75% of the time’) in three test sites. Why not 100% all the time if it is 100% lethal, as claimed?

The trial has NOT shown that the need for repeat baiting has been solved, as claimed. Surprisingly, CSIRO is now advising that farmers should bait several times – even with the double dose products!

Seminars have also now suggested that farmers bait mice with neighbours cooperating as groups. So now is re-infiltration being recognized as a factor as we have said from the outset?

All this is worrying news for some landowners, understandably. So, when told that the only magic solution for the occasional need to re-apply bait is to double the toxin loading it seems superficially attractive. ‘More must be better’, so the APVMA allowed an emergency permit for this to be done.

We have seen excellent control when bait has been applied to pre-harvest crops with hundreds of kilograms of available feed per hectare, so it is not valid to claim that the bait cannot work if there is alternate food. Perhaps it might take longer for a mouse to encounter the toxic grains if they have a lot of food options, but it is not true to say that the presence of alternate food makes current baits ineffective. A mouse eats approximately 10% of its liveweight per day which is about 50 grains of wheat. Only one or two of these (4% of total) need to be treated. Mice have the opportunity to eat many grains before the first one or two take effect.





Regardless, if the mouse has trouble finding a grain in a sea of alternate food it might not find a double dose grain any faster. In theory, there is plenty of bait, at an application rate of 1kg/ha, to kill nearly all the mice present in a crop situation, and this is overwhelmingly the outcome for most users.

## Do some farms need to bait more than once?

Farmers are rightly anxious if they have to re-bait, due to cost of extra bait and even more importantly, the cost of repeat applications by air or ground. Even so, we should point out that the cost of a bait application is recovered even if about 2% of crop loss is prevented (and about 2% to 4% if aerially applied). So, with potential crop losses often above 30%, the landholder is always well ahead in any benefit: cost calculation. If anyone could get more than 10 times their money back every time they pulled the handle of a poker machine it would be hard to dislodge them from the casino! The crops saved during 2021 were worth billions.

We have a few reports of the need to rebait and they are real, but we estimate that it occurs in well less than 5% of users.

## What might cause the occasional need to rebait?

If we accept all the speculations, this is entirely due to not enough chemical on the bait. Furthermore that doubling the chemical dosing prevents the problem totally. This is what has been presented to the industry in a massive information campaign. But why, we ask, is it now recommended that

farmers use the high dose bait many times to suppress mice and also work with neighbours to control mice? In some cases frequent reapplications could leave some mice as “learned aversive” to the bait. But this event is rare and it is incorrect to suggest that dosing of all bait must be doubled to avoid this.

Moreover, there are other reasons for perceived bait failures. No product is ever 100% effective all the time in every possible circumstance.

One suggestion was that wet weather affected bait but we have shown bait to remain lethal even after more than 100mm of simulated rain. Also, many aerial contractors have reported perfect outcomes when bait has been applied in light rains or on moist soil. Nor have we seen a consistent pattern with crop type, stage of development or timing. With few reports there is just no consistency. Nor is there a consistent area affected. It seems rare and sporadic but is frustrating for the landholders affected.

## What other factors MIGHT cause this event?

Firstly, it is not easy to reliably spread just one kg of bait evenly over a hectare. It takes a well-adjusted and very restricted ground spreader to do this properly. Some ground spreaders are simply running out of bait when half way around the paddock – leaving some areas un-baited unknowingly. A spreader blocked by a wheat head or some straw will also lead to incomplete deployment. Aircraft dumping without venturi spreaders will not apply bait correctly. Aircraft with properly fitted venturi spreaders can get close.

Some aerial operators have chosen to fly swathe widths of up to 100m, when Qld government data on bait spreading, tested many years ago, found an ideal width of 40-50m between swathes. Mice can move large distances to forage (see below) but, if food is plentiful, they may not always move between swathes to find bait dropped in widely spaced treatment. Some landowners also mistakenly think that just baiting around the crop fringe will protect all the crop. This was common practice using bromadiolone dosed baits in NSW (not other states) but is ineffective. Aerial operators often see damage well within a crop that would never be effectively treated by baiting just around a crop perimeter. Moreover, the APVMA has prescribed that bait should not be applied close to crop edges (shelter belts) so this restricts perimeter use. (*See more detailed discussion of this in a separate commentary on label errors later in this newsletter*).

We also know that mice can be very mobile. We have tagged and released live captured mice that can appear in traps in a different paddock, half a km away, on the following night. They do not always need to move big distances, if food is plentiful locally, but anyone with a car at night will have seen thousands of mice crossing a highway reservation (>100m width) in a few seconds! They can be fast and purposeful. The important point is that mice can quickly reinfest a baited area if conditions are right, such as shortages of food and high densities where they are. All these factors could contribute to reinfestation but a landholder might see this as a ‘failure’ of the bait. Doubling the “deadness” of the initial mice will do little to stop this.

Finally, mice are not evenly dispersed across the landscape. They can be at high density in one paddock or farm and low in an adjacent paddock or farm and there can be big variation even within a paddock. So, if we evenly apply our 22,000 grains per hectare but there a lot of mice in one corner of the paddock, it is possible that the first mice to get out of bed to feed are able to eat most of the bait, while their sleepy friends get up to see



*A continuous stream of trucks left ACTA on a regular basis*



little risk. Looking at residual mice in the corner “hot spot” might give a perception of general failure. Guess where people check the most?

## Consequences of a high dose approach

During 2021 we had a mouse ‘madness situation’ where key industry bodies request manufacturers to increase dosing of bait based largely on speculations from undisclosed work, and in the middle of a serious plague, and when chemical was in short supply. Despite this challenge, ACTA responded quickly to supply several hundred tonnes of this new type of product at short notice (more than any other supplier). Our view was that if the customer wants it we should perhaps supply it, but not necessarily recommend the approach on the basis of current data. This used chemical at twice the normal rate and considerably slowed the rate of bait production. ACTA had the dilemma of whether it was better to kill half the mice twice or all the mice once! Where possible we tried to offer both options and with the support of the rural merchant industry,

we made the available chemical last just long enough. At a time of chemical shortages and global freight problems there were risks of supply shortage if all land holders used the higher dose version. This could have left half the crops unprotected and some farmers, who need to bait, to lose their crops. To overcome shipping problems and despite our highest ever chemical stockpiles we were able to achieve 11 air freight supplies during 2021. The last was partly subsidised by NSW DPI on the basis that such chemical “could only be used on high dose product in NSW”. This may have posed a problem if the chemical could not be used to save crops in other states. Our approach aimed to get as much total bait available and did not just focus on the high dose version. This required careful balancing and support from industry.

## Avoiding more mouse management madness?

We will consult with all the experts and experienced mouse managers to get better information to land holders. No experts we have spoken to so far have

seen a need to double the dose rate and agree that excellent outcomes are normal for existing products. Secondly, we will ask questions as to the underlying motivations and probity for the strong recommendations for double ZP dosing and application of industry funds.

During the lull in mouse activity, we will do as we always do and rebuild reserve stocks in case the plague continues into next Autumn. Right now, this is too early to call. We anticipated the last big plague in 2011 when we received reports of increasing mice from farmers in October 2010. But reports at this time are not so extreme. However, La Nina conditions do look risky at this time and we are on alert. Much can happen between now and planting for 2022. Landholders can have confidence in the manufacturers and merchants who work hard as a team to solve logistics issues to maximise outcomes for farmers and try to avoid spooking the market.

Currently bait is in oversupply throughout the merchant system.

*Our warehouses were running overtime receiving, storing and despatching massive volumes of baits*



*Just one of 11 air freight chemical shipments achieved by ACTA to save crops during 2021. This was additional to the normal sea freight supplies which were delayed due to CV19 impacts on global shipping. This consignment chartered a Boeing 767 from India to Malaysia then three freight flights to Darwin and road freight to Melbourne to save crops as quickly as possible.*





## RABBAIT® Rabbit control



### AUSTRALIANS have been battling environmental damage caused by rabbits for 150 years plus.

The introduced biological control measures of calicivirus and myxomatosis are now failing to fully control rabbit populations in many areas across Australia.

RABBAIT is the proven performer as it is cheap, simple to use and highly effective. Like any control it is best used with other measures such as warren destruction. "It is a "multi feed" bait with a low risk of secondary poisoning, requires no special permits or training and is made with sterilised oats so there is no threat of oat or foreign weed germination after baiting."

Rabbits like to investigate freshly disturbed soil, so it is beneficial to scrape a shallow furrow about 2-3 cm deep either by hand or mechanically, and get rabbits used to eating oats with a couple of generous feeds of untreated oats.

Start this treatment of "pre feeding" a few days before you treat with RABBAIT® Pindone Oat bait.

Create your bait trails in the areas where rabbits feed, not just around warrens, and ensure enough untreated oats are used so that all rabbits are able to access the oats."

RABBAIT® Pindone Oat Bait is a "multi feed" bait so it is imperative that three doses are applied about four to five days apart over a 12 to 15 day period to get the best results.

Pindone is a weak anticoagulant agent that overtime inhibits vitamin K recycling. Pindone is rapidly metabolised by rabbits and the multi-feeding program is needed to deplete the rabbits' vitamin K reserves.



Call one of our representatives for further advice or download the RABBAIT® booklet from the ACTA website



**FOXOFF®**  
FOXOFF® 1080 Bait and  
FOXOFF® 1080 Econobait

## *There are more foxes than most people think!*

Many years ago we launched our famous "bulls eye" analysis of the true scale of the fox population which caused a lot of rethinking of fox management. The occasional display of shot foxes on the fences reminds us of the true scale of the fox problem.

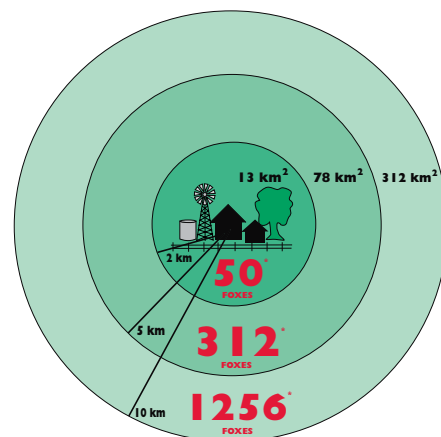
Absolute fox numbers are unknown but a capture-recapture sampling of a population near Bendigo in Victoria many years ago came up with an estimate of about 4 foxes per square kilometre. Another estimate gave 16 foxes per Km<sup>2</sup> in the eastern suburbs of Melbourne. Most consider that there are 2 to 10 foxes per Km<sup>2</sup> in most habitats (lowest perhaps in desert areas and highest around swamps it seems).

If you are a lamb in a paddock on a farm that is 2 kilometres in diameter you may be facing 13 square kilometres of foxes = 50 foxes at 4 foxes/Km<sup>2</sup>. It is thus easy for lot's of lambs and wildlife to go missing! Within 5 kilometres there are probably more than 300 foxes.

Many farmers still think that it is only a "few old rogues" that do the damage but this is simply not true. Young foxes are everywhere and they all eat!

Since Victoria is about 250,000 square kilometres and we have perhaps 4 foxes per square kilometre, then we have a million foxes (+/- a few hundred thousand!). Half of these are female and each female rears about 5 cubs each season (even the one year old vixens breed successfully). This gives a production rate of about 2.5 million foxes a year in Victoria. Similar calculations apply for other sates but some such as WA and Qld have lower densities of course. Many die from natural causes, so about half of each age group dies each year. If one hundred foxes are born, about 50 make it to 1 year old and 25 to two years and 12 to 3 years.... and so on. Thus most foxes are 1 and 2 years old.

**The messages here are simple. It is not enough to control foxes just once. It is NOT good enough to put out five baits or five bullets to deplete any area from foxes! There are a lot more than that and they don't stop for boundary fences. In fact they deliberately disperse each Autumn.**



# Toadinator

and ACTA ATTRACTA

Toads are a major nuisance in parks and gardens, and a “key threatening process” for native species.

Having pioneered methods to control foxes, then rabbits, wild dogs, plague mice, cane field rats, feral pigs and invasive tramp ant species, it was perhaps inevitable that ACTA would try to make a contribution to overcoming the cane toad menace.

To this end we have used funds from fox and mouse bait sales to sponsor a research project at James Cook University (JCU) at Townsville to develop a high technology cane toad trap.

The joint research led to the **ACTATRAP** (or perhaps it should be known as the “**Toadinator**”).

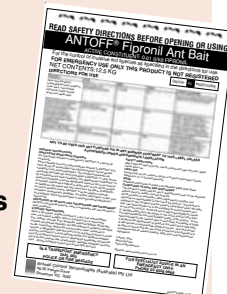
The ACTATRAP has several design innovations. Firstly, it has ACTA-designed clear swing finger doors that allow toads of all sizes to get into, but not out of the trap. Secondly, arising from ACTA industry sponsored R&D at JCU, and led by Prof Lin Schwarzkopf and her team, a “sound and light show” is incorporated. This provides the mating calls and communication signals (croaks) to attract toads, and also ultraviolet lights to attract insects to the area of the trap. This encourages toads to enter, and feeds those that are captured until disposal. The ACTA ATTRACTA is solar powered to charge during daylight and attract toads at night. The trap can thus operate autonomously for extended periods.

The ACTATRAP is flat-packed and easy to assemble to keep costs as low as possible. It also features an access door so that desired frogs can be removed, has shaded areas for toads to avoid direct sunlight, and has an automatic solar charge function via a robust solar panel so the unit runs at night. In a way, it can be described a “carbon neutral” trap device! We have even included a volume control so that the “croak” can be adjusted to minimise any noise complaints in sensitive areas, and there is provision for changing the attraction calls so that the trap can be used for other desired or pest toad or frog species.

While we do not suggest that we can trap our way out of the toad problem, and we know that some biocontrol or lethal agent is still needed, we do believe that this new trap technology will at least provide another low maintenance tool to locally reduce toad density. **We hope this will enable better depletion of toads where they are encroaking (sic) into native animal habitat with disastrous results.**



Animal Control Technologies has worked for several years to develop a new type of ant bait that is extremely potent against protein feeding species. Many ants are predominantly sugar feeders, but the baits commonly used to treat these ants do not work on protein feeders, (and often also vice versa). Some ants require both food sources and others change diet seasonally.



Invasive ants are a significant problem for Australia. Many will have heard of the incursion of the **Fire Ants** (*Solenopsis invicta*) into Queensland in recent years. To date over \$200M has been spent in containing them before they could spread too widely.

If such ants were to spread unchecked they will pose significant threats to agriculture, to the environment and to people.

Another serious tramp ant invader is the **Yellow Crazy Ant** (*Anoplolepis gracilipes*) but we also have **Electric Ants** (*Wasmannia auropunctata*) and the **African Big Headed Ant** (*Pheidole megacephala*). Many of these species are the subject of eradication programs by government authorities. A wide range of nuisance species also cause problems inside homes and establishments or in agricultural crops.

The **Yellow Crazy Ant (YCA)** is a highly invasive species listed by the IUCN in the top 100 invasive organisms of the world.

**Like any other invasive species, ants have the potential to cause massive damage to Australian ecosystems.**

The ACTA ant bait products have been shown to reliably deliver a wide range of active ingredients including growth regulators such as S-methoprene, and pyriproxyfen or metabolic poisons such as hydromethylnon and fipronil. ACTA has enjoyed excellent collaboration with active suppliers including Bayer, BASF and Sumitomo Chemical and are pleased to have their matrix technology adopted into their leading edge products. Users will be familiar with the ACTA product under the product names of ANTOFF®, PRESTO®, DISTANCE P®, Engage P and mostl recently Synergy®.

We see this high technology product as a major breakthrough in ant management that could provide a universal solution to many of the world's domestic, industrial and environmental ant problems.







# Delicia® **SLUGGOFF®** Lentils

## Cost-effective slug & snail control

Control of slugs and snails is the number one pest issue for crops in much of the EEC. Their experience and technology is vastly superior to the traditional cheap pellet forms of bait for slug and snail control. This is why ACTA has partnered with leading supplier Frunol Delicia in Germany to bring the best technology to Australia.

The SLUGGOFF® metaldehyde product is not only fully water fast, highly effective and easy to spread, but also achieves broad-acre or horticultural slug and snail control at the lowest cost per hectare. Full details are available in the SLUGGOFF® booklet on the ACTA web site but are summarised below.



## 5 good reasons to choose SLUGGOFF®

### **Unique lentil shape allows adult, juvenile & small molluscs to eat the bait.**

The hi-tech formulation achieves high doses throughout the pellet and provides thin edges for even small snails to eat.



### **Easy to apply through ground spreaders or by aerial application**

Easy to apply through ground spreaders or aerial application. Spreaders are the best helping hand for smaller property owners.



### **No attractants needed**

No additional attractants are required in a baiting program as SLUGGOFF® is highly attractive.



### **Fully water resistant**

Highly effective in all seasons

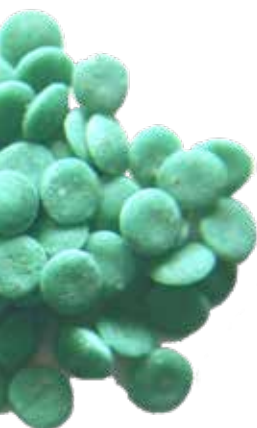
### **Up to 50% more baits per gram**

Unique shape achieves 100,000 baits/kg of SLUGGOFF®



SLUGGOFF®  
101 baits per gram

Competitor only  
64 baits per gram



## The future shape for quality slug & snail control







# HOGGONE®

## meSN Feral Pig Bait

Trust the  
proven  
performers

## New short guide to using HOGGONE

Feral pig management has never been easy, as most control methods kill or remove only a proportion of the pigs present. This applies to shooting, trapping and baiting on many occasions. However, we know that we need to remove 70% or better in any program to get on top of the pig situation. Pigs can breed every season (or even 3 times in two years if conditions are favourable) and with a litter size of up to 8 piglets per sow and high survival rates, they can rival rabbits in population recovery.

With the development and testing of HOGGONE® we have seen the benefits of doing a thorough job. This requires first finding pig activity "hot spots", clustering the pigs to a baiting point and conditioning them to accept the bait. Trials and user experience have shown that when done well, we can control almost 100% of a family group, even with just one or two nights of toxic bait deployment. Just placing bait without prior pre-feeding to cluster the whole sounder is ineffective, regardless of bait type.

Getting near total knockdown of each sounder family group takes a bit more work initially, but pays off in terms of achieving effective control.

This process is explained in the HOGGONE® booklet (available on the ACTA website), but is also summarised in the following pages in a simplified form. The short form guide is also available on our web site.

## The complete pig management solution



# A quick guide to a new way to humanely manage feral pigs

**HOGGONE®** uses a peanut and grain flavoured paste containing high levels of the food preservative sodium nitrite (SN) to quickly and humanely kill feral pigs. SN is toxic to pigs in high doses but safe for humans in food at very low doses.

**HOGGONE®** is APVMA approved and does **not** require special permits to purchase or use.

SN degrades in the environment and poses little or no risk to scavengers feeding on pig carcasses. This bait works faster and more reliably than all other methods, but to get best results it is necessary to properly “set the pigs up” for a fall. Full details are available in a detailed **HOGGONE®** product booklet downloadable from the ACTA web site (<https://animalcontrol.com.au>). This quick guide provides a simple overview.



- Step 1** Find where mobs of pigs are actively foraging. Look for tracks, signs of rooting, tree rubs and sightings. IR triggered cameras can assist in conformation of activity and numbers present. Pigs may forage widely in good wet seasons, so best time to control them is during summer.
- Step 2** Place locally available food such as grain, corn or fruit at the likely active site. A small quantity (say 20kg) is all that is needed. Check frequently and replace if pigs are taking the food, as this will cause them to habituate to this feeding site. If site is inactive (no food taken) after a week simply abandon and set up a new site where pigs are visiting. This pre-feeding process clusters a whole sounder (family group) to feed reliably at one point. This investment in time to CLUSTER will lead to much higher control than just placing bait randomly.
- Step 3** At the active site, deploy the **HOGGONE®** hopper with lid propped open and some grain or other food inside and in front for a day or two (sometimes longer is needed). This teaches pigs that the hopper is no threat and continues to cluster the group. Then close the lid, as pigs quickly learn to open the lid to access food.
- Step 4** If food continues to be taken by pigs from the hopper, immediately switch to trays of placebo (non-toxic) paste. While we know that no-one wants to feed the pigs(!) this step for one or two nights will accustom the pigs to this “new” food type. Usually 80-100% is eaten on night 1 and all on night 2.
- Step 5** Finally, replace the non-toxic bait with **HOGGONE®** SN toxic bait and place warning signs (provided with hoppers) at entry points to baited area (APVMA label requirement). Almost all pigs in the group will feed on the first night of toxic bait deployment and will be found dead within 50-200m on the following morning. If any pigs are thought to remain, deploy toxic bait for a second night, though generally few additional pigs are controlled.
- Step 6** Collect dead pigs if required and recover, wash and dry hoppers for re-use or relocation. Repeat process if additional pigs are discovered in the area of control.

	Cluster Phase	Grain Phase		Placebo Phase	Toxic Phase	Collect dead pigs if needed
Day	Cluster Pigs over several days as needed ↓	↓	↓	↓	↓	
Product		↓	↓	↓	↓	
		Grain Only		Placebo	TOXIC	
Baitbox	Absent until pigs visiting site					
		Lid Open				
			Lid Closed			



## Some helpful tips:

- It is better to have several baiting points in a large area, rather than try to get all sounders to visit one site. They wander in family groups that do not readily mix.
- For clustering only small piles of feed are needed, say 20kg. Pigs react more to feed presence and frequency of presence than to feed quantity.
- US studies have shown that placing baiting cluster points at 750m grid spacing can also achieve high levels of biomarking (mock poisoning) of pigs in a large area, if activity sites are uncertain.
- For disease control carcasses can be picked up and buried or burned, but otherwise it is safe to let them rot naturally as the SN levels present **do not** pose a risk to scavengers.
- Clustering is aimed at getting >70% and preferably 100% knockdown of the whole sounder. Lower control, just as for shooting and trapping, if not done perfectly, will enable females to breed up again quickly.
- Work with neighbours to deplete large areas. While neighbour notification is NOT required (unlike for 1080), we still recommend working together for mutual benefit.
- Moisture is the enemy of SN chemical. SN absorbs moisture and can degrade quickly to cause a loss of palatability of the bait. Discard old bait and use bait as freshly as possible from date of manufacture, preferably within 9 months. Old bait will become unpalatable and can release gas to swell containers (tell-tale sign).



**Remember, the reason for doing all steps is to try to get as close to 100% control of each mob as possible. Previous short cut baiting and trapping methods have killed some pigs but not enough to get proper control. Thus, feral pig problems are getting worse everywhere. It is worth the investment to cluster bait to ensure maximum knockdowns.**

## For best results

<p><b>DAY -1</b></p>	<p><b>Cluster Phase</b></p> <p>Use about 20kgs of grain (can be fermented) at sites of pig activity to cluster pigs to the site</p> <p>Do not place hoppers unless pigs are visiting</p>	<p><b>Grain Only</b></p> <p>Pigs quickly learn to eat from the hopper.</p>	<p><b>DAYS 2-4</b></p>
<p><b>DAY -1</b></p>	<p><b>Cluster Phase</b></p> <p>If pigs are present they will feed repeatedly at night.</p> <p>Try to estimate pig numbers based on consumption of grain</p>	<p><b>Placebo Phase</b></p> <p>Close lids and fill hopper with grain.</p> <p>Then if grain is taken fill with Placebo (unposioned) HOGGONE® bait</p>	<p><b>DAYS 5-6</b></p>
<p><b>DAY 1</b></p>	<p><b>Grain Only</b></p> <p>Secure hoppers to the ground.</p> <p>Fill with grain with lids propped open</p>	<p><b>Toxic Phase</b></p> <p>Pigs that are used to eating the placebo bait will readily take poison bait on the first night</p> <p>Pick up dead pigs next morning, if required</p>	<p><b>DAYS 7-8</b></p>

# ACTA 1080 Concentrate

30mg/mL (Sodium Fluoroacetate)

for local production of pest animal baits

If fresh meat, grain, fruit or carrot baits using local bait materials are to be prepared, the ACTA 1080 Concentrate is approved and readily available for this application.

Pre-dosed baits, manufactured by ACTA, do not require local dosing and remain available to present a cost-effective option for any baiting program. These baits include FOXOFF®, FOXOFF® Econobait®, FOXECUTE®, FOXSHIELD® (for foxes), DOGGONE®, DOGABAIT® (for wild dogs), RABBAIT® (for rabbits), and PIGOUT®, PIGOUT® Econobait® and HOGGONE® (for feral pigs), Dried Meat Baits (DMBs, based on humanely culled kangaroo meat) and our 1080 and PAPP capsules for Canid Pest Ejectors (CPEs). All suitable options for cost-effective pest management. (see [www.animalcontrol.com.au](http://www.animalcontrol.com.au))

Despite a 10 year regulatory review process involving all states, the use directions for 1080 Concentrate still vary slightly between States for these pests. There are slightly different requirements for notification of neighbours and for dosing and even for warning signs and bait colour.

We recommend that any user refers to the details on the APVMA approved label booklet, included with the purchase and available on our web site. This label details all individual state requirements for all applications.

ACTA does not condone the use of substrates such as bird eggs or chicken heads for pest management but these continue to be approved by APVMA.

A Safety Data Sheet is available and can be downloaded from the ACTA web site:

- [ACTA 1080 Concentrate Label Booklet](#)
- [ACTA 1080 Concentrate SDS](#)

## Freight and delivery:

This concentrate product is considered a Dangerous Good (DG) for transport and additional precautions are taken by ACTA to ensure safety in transit. Due to the requirements for DG Transport there is a cost-recovery, which is quoted on each order. For small orders the cost per unit is higher than for larger consignments sent to the same location at the same time.

The product is packaged in 200mL, 1 litre, and 5 litre DG plastic bottles fitted with tamper-evident closures. These are then shipped in sturdy shipper boxes.

Bottle size	200mL	1 litre	5 litre*
Minimum order per shipper	10 bottles	6 bottles	2 bottles

\* For 5 litre packs this shipper is a triple walled box bearing appropriate labels and "this way up" sticker.

## Orders:

Please email requirements to [sales@animalcontrol.com.au](mailto:sales@animalcontrol.com.au)

And a quote, including delivery fee, will be prepared.

Allow several days for DG shipments and specify a delivery address that is manned by a person qualified to receive these goods. All consignments are tracked and our logistics team can provide follow-up support if needed.

## Injector guns:

ACTA also supplies quality stainless steel injector guns for easy repeat delivery of the 3mg (0.1mL fixed volume) dose for fox baits and 6mg (0.2mL fixed volume) for wild dog baits. These doses are more than adequate even for the largest pest animals. Quantities for pig bait production are as per label link indicated earlier.



## Note for Queensland users:

Previous government supplies of 1080 concentrate were mixed to 36g /litre of 1080 in the concentrate. Now, with a move to a national approach, all 1080 concentrates are mixed to 30g/litre in all states.

Thus, as a guide, in QLD use 1.2 times the volume of ACTA concentrate (=36/30), than the former government concentrate. This achieves the same final bait dosing rate (mg 1080 per kg of bait substrate).













In NSW, Vic, QLD & SA concentrate is dyed strong blue and in WA it is dyed red. Additionally, in QLD, it is a requirement, when using grain, fruit or carrots, that the base substrate is coloured green but meat bait in QLD does not need to be dyed green. The dye type and the mixing of blue and green dye does not affect efficacy. Please specify state when ordering.



# MOUSEOFF® and MOUSEOFF® ECONOBAIT

## What are the differences?



-  **MOUSEOFF® 25g/kg ZINC PHOSPHIDE** bait was first developed under permit by ACTA in 1997 and was fully registered from 2001. It has been used successfully for 24 years.
-  **MOUSEOFF®** uses high grade wheat that is then post-treated with high energy sterilizing radiation to ensure that there is no germination of the wheat, or any viable weed seeds or pathogens in bait.
-  While other manufacturers may claim 'sterilisation' this is sometimes by simple heat treatment to deactivate the wheat. This is a lesser standard process. **Beware!**
-  Most landholders now require the sterilised premium **MOUSEOFF®** product, when it is available.
-  In the last major plague in 2011, the needs for sterilisation far exceeded the capacity of the radiation plants. This limited bait supply and caused delays initially.
-  To overcome this ACTA registered a non-sterilised version, called **MOUSEOFF® Econobait®**.
-  This is made to the same standard as **MOUSEOFF®** except that the grain is not irradiated.
-  However, the grain used for Econobait manufacture is high seed quality. Good seed grade wheat is sourced from quality growers via our grain supply network and is then fully screed and cleaned.
-  A sample is taken every 30t and independently assessed by an accredited tester. ONLY wheat that has no DETECTABLE foreign seed other than occasional oat or barley (<0.1%) is accepted.
-  The process avoids the expensive sterilization costs so **MOUSEOFF® Econobait®** is approximately 30% cheaper than normal **MOUSEOFF®**.
-  The chemical dosing is the same for both products.
-  **MOUSEOFF® Econobait®** is only available in 125kg drums and 500kg Bulka Bags.

	ZP Dose	Seed type	Attractants	Sterilisation	Seed testing	Germination	Relative cost
<b>MOUSEOFF®</b>	25g/kg	High quality wheat (often seed grade)	Yes	Ionising radiation 25kgrey	No	No	Higher
<b>MOUSEOFF® Econobait</b>	25g/kg	Seed graded wheat	Yes	NONE	Yes*	Yes, if not eaten by mice	Lower

*We recommend the sterilised product in most situations for maximum biosecurity, but in a major plague we offer the Econobait, so that as many crops can be saved as possible.*



# Clarifications of restrictions on use of MOUSEOFF®

**During the recent plague event we have seen some producers seeking permits to apply mouse baits to 'bare ground'. In this case to pre-planted fallow.**

It has ALWAYS been necessary and common practice to use mouse control at and before sowing, if mice pose a risk to planted seed or emerging crops, as was the case in Autumn.

## How did this label restriction arise and what was intended?

At the time of registration of MOUSEOFF® (year 2000) there was concern within Environment Australia (EA) reviewers that we would be spreading grain baits over large areas and thus pose a risk to birds.

At the time this was a reasonable concern which had to be considered, but in three years of use on a large scale under permit no bird losses were observed. I attended a meeting at the APVMA to discuss this. Also present were Jack Holland and Ian Pitt (ornithologists from EA), Graham Barden (APVMA) and Bob Parker (Qld State Department with a knowledge of ZP chemistry). Despite there being NO evidence for any significant risk we were forced to accept two conditions on the final label "to enable registration to occur". As a mouse event was threatening, we considered it better for the industry to concede to these two restrictions, rather than delay registration.



The two conditions were that bait is:

**not applied onto bare ground and  
not applied within 50m of a crop edge.**

In both cases the restrictions were precautionary even though use over wide area under initial permits had shown NO non-target impacts. It was intended in this case that "bare ground" applied to roads, paths and concrete hardstands, on the basis that perhaps birds could find bait in such situations. The bait is coloured black (not a preferred food colour for birds) and is not easy to find on fallow, and there was no intention that the "bare ground" in this case referred to fallow. Accordingly, we have always advised that it is OK to use the bait at or before planting and on crops before emergence. This has been routine for 24 years and has caused no problems for birds but saved many crops.

The second constraint, preventing application 50m from crop edge, did not apply to adjacent crops, but was really aimed at not putting bait close to tree shelter belts where birds might roost and be vulnerable. Sadly, these same shelter belts provide mouse harborage, so it limits ability to control such mice. Moreover, in Queensland where sometimes strip crops are just 100m wide, the restriction stops all baiting if taken literally.

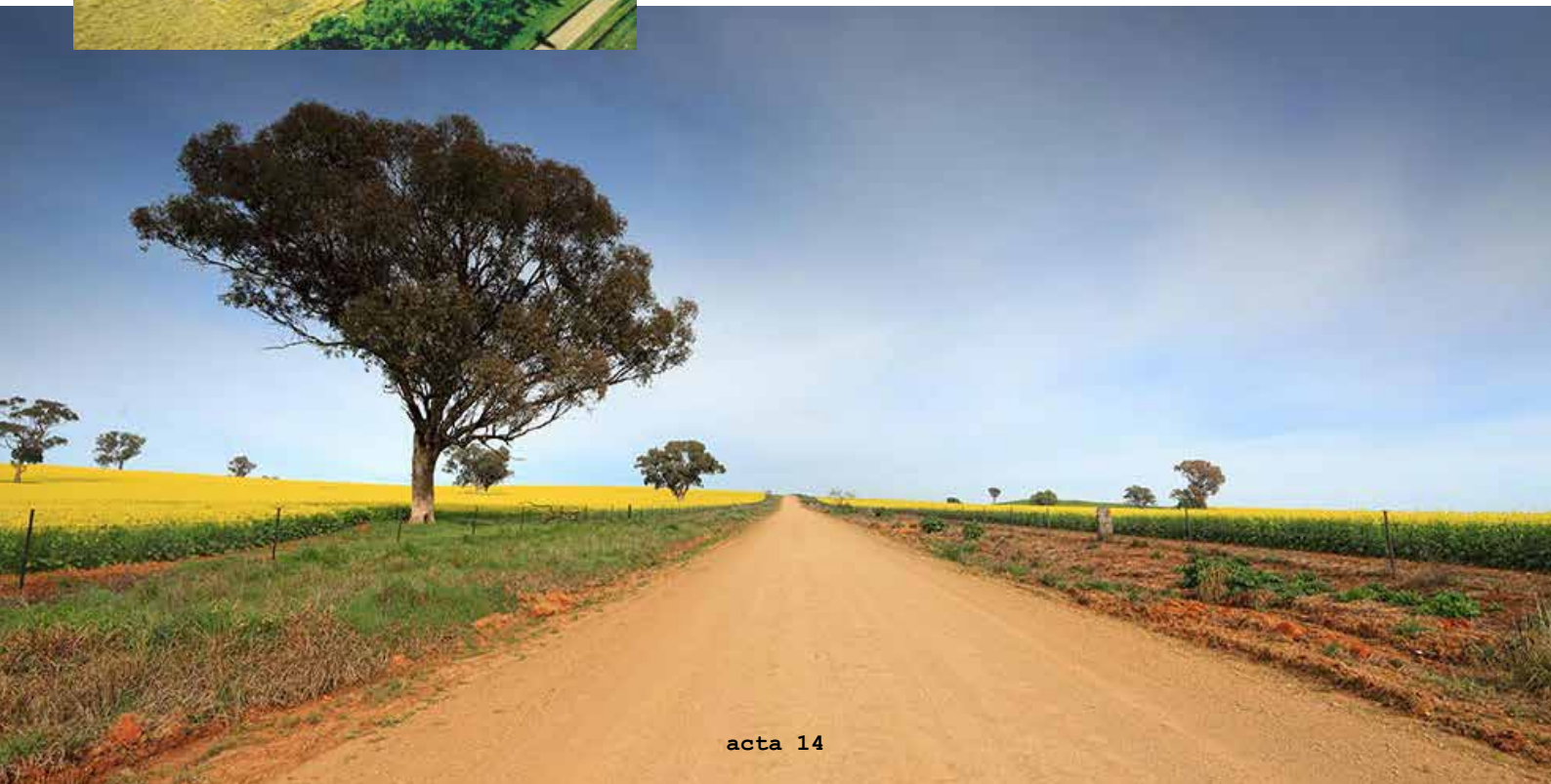
This is a common problem when labels are changed or poor precautions are included by various regulators at registration or review.

Another example is when we had to include a statement of rabbit baits that such baits **"cannot be applied in areas accessible to children"**. This was taken from the standard and appropriate labelling of anticoagulant baits for domestic use, but is very problematical for use of pindone for rabbit control. RABBAIT® is used and actually recommended to control rabbits in parks, cemeteries, urban fringe areas and around houses in rural areas (where 1080 baits would pose a higher risk) yet all these areas are "accessible to children".

As registrants, we are often asked to accept these label precautions even though they become very problematical down the track. None of the restrictions above are based on real risk but there is a tendency to load labels with a great many restrictive statements that are very difficult to change. If not worded clearly they lead to confusion in users. It also has the perverse impact of causing users to ignore non-sensical labels. It would be better to change the restriction to "do not apply mouse bait to areas of hard surface such as concrete hardstand or roadways", or add a statement to say in the case of mouse control fallow crops are not "bare ground".

**We would respectfully suggest that APVMA looks at all restrictions on all pest control products and asks "are these restrictions clearly worded and are they truly necessary for this product in this situation" with a view to reduce the number of restrictions where experience in use shows that there is not a problem.**

*Baiting limitations in regards to shelter belts and roads in close proximity to crops, hamper complete baiting programs and may provide sanctuary for mouse populations.*



# ACTA WA Facility

## Servicing the growing need for Animal Control products



**With demand for all types of pest predator baits increasing and with the traditional use of dried meat bait ethically sourced from kangaroos in WA, ACTA has taken up the challenge and are now offering a wider range of dried meat baits (DMB's), pre-formed dried meat baits, semi dried bait meat portions and raw bait meat products.**

In addition to our range of baits we also offer very high-quality bait heads for the ACTA CPE devices on our modified retaining holder for maximum lure retention (see [link to CPE booklet on our website](#)).

After extensive product development ACTA has invested in a dedicated modern facility to cater for these growing needs. (see [link to booklet on our web site](#)).

We only accept kangaroos harvested by commercial professional shooters with all appropriate licenses, qualifications and approvals. Our processing facility is state of the art with qualified staff overseeing quality control and the manufacture of all meat products.

All products are processed through our large capacity QA controlled drying process. Baits are pre-treated to further enhance shelf life of all products.

DMB's are "FULLY DRIED AND CRYOVAC PACKED" so the longevity of the baits can be extended if stored in a dry cool place.

Our entire range of DMB's are extremely palatable to foxes and wild dogs for high bait take-up.

After extensive research and development in the past 2 years ACTA has also produced a reformed bait type that has all of the attributes of a normal bait portion. The re-forming process is strong enough to withstand the shock forces of arial baiting.

Developing the pre-formed bait improves uniformity and the potential for automatic dispensing from aircraft or vehicle.

Due to the natural nature of this product range and seasonal supply issues, we require some advance notice of large orders and future requirements to help plan production and transport.





# STAFF UPDATES AT ACTA

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## ACTA draw off tubes are now available

As our previous supplier has discontinued supply of draw off tubes for continuous supply of ACTA 1080 concentrate to bait injector guns for repeated 0.1 or 0.2mL doses, we have engineered a new version in house.

These tubes allow continuous dosing from either 200mL or 1 litre ACTA 1080 Concentrate bottles.

The draw off tube sets are available direct from ACTA @\$25.

We have also secured an international supplier of quality dosing guns but these are not quite in stock due to International freight disruptions.

We can accept orders for immediate dispatch as soon as new stocks arrive.



## Quality tools in the fight against pests



**FOXOFF®**  
Fox Bait



**RABBAIT®**  
Pindone Oat Bait



**MOUSEOFF®**  
Bromadiolone Grain Bait



**RATTOFF®**  
Zinc Phosphide Bait Sachets



**TOADINATOR™**  
& ACTA ATTRACTA™



**SLUGGOFF®**  
Slug & Snail Bait



**FOXSHIELD®**  
Fox Bait



**FOXECUTE®**  
PAPP Fox Bait



**DOGABAIT**  
PAPP Wild Dog Bait



**DENCOFUME®**  
Fumigation Cartridges



**RABBAIT®**  
1080 Oat Bait



**PIGOUT®**  
Feral Pig Bait



**MOUSEOFF®**  
Zinc Phosphide Bait



**DOGGONE®**  
Wild Dog Bait



**HOGGONE®**  
meSN Feral Pig Bait



**Animal Control Technologies (Australia) Pty Ltd**

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