

Foxes are beautiful animals... *but they don't belong in Australia*

The European Red Fox (*Vulpes vulpes*) is a magnificent animal. It has keen eyes for day or night vision, an amazing sense of smell, acute directional hearing and powerful jaws to capture and kill even quite large prey. Foxes are agile and fast (search YouTube under "fox chases wallaby" for a great example of a fox attacking a wallaby on the run) and they can even climb trees and fences. Females can breed in their first year and typically raise 5 cubs each. Given these formidable attributes, one cannot but have respect for such a sophisticated apex predator.

Nothing shows this better than the photo (left) kindly provided to ACTA by keen fox controller and amateur photographer Daryl Panther (of Victorian Wildlife Management & Pest Control. www.victorianwildlife.com.au).

The sad thing is that this predator was mistakenly introduced to the Australian continent that had very few such predators. Australia was full of small mammals in the 1860s. Adding European rabbits (*Oryctolagus cuniculus*) at the same time provided even more food for foxes.

The introduced foxes quickly spread and now colonise almost every available habitat including city parks, grasslands, swamps, coastal dunes, alpine areas and forests from our southern most coast to the tropic of Capricorn

in Queensland. Their range is probably still expanding. They have a very adaptive diet that includes berries, fruits and insects, and they have thrived on a continent full of wildlife over the last 150 years. They are a key factor in our loss of species diversity with small mammals, marsupials and ground nesting birds at particular risk. Even worse, they would be a vector for rabies, should this virus enter Australia, and they already carry hydatids and mange which are problems in rural areas.

The fox is a great animal but it is not a great animal for Australia!

Foxes also kill young livestock. Lamb marking percentages are easily increased by 20% or more with effective fox control. Effective fox control programs, involving area wide approaches, are one of the highest benefit/cost exercises any sheep grazer can undertake. With lamb prices high in recent times, the benefit of a fox baiting program is more than 50 times the cost of even an intensive program, with bait replacement over 4 weeks at a bait density of 1 bait per 5-10 Ha. With increased lamb marking percentages at a payback of 50 times the cost and with a direct benefit to native fauna, baiting really is a win-win! **The war on foxes must continue and we urge all governments to increase facilitation of landowners so that more landowners can join in to defeat this critical pest. Minimising impediments to enable increased community participation is a critical factor in managing this widely dispersed pest in Australia.**

Prof Linton Staples



FOXOFF® & FOXSHIELD® baits are a proven method for fox management and are available to approved purchasers from local government authorities (such as LLS groups in NSW or NRM Boards in SA) or from accredited rural merchants in other states.

In Qld the correct process is for the landholder to contact their LPO (Land Protection Officer) at DAF or their Local Authorised 1080 pest manager at their local regional council. In the Northern Territory, landowners can purchase their baits through their rural merchant store after obtaining the correct paper work from Department of Primary Industry and Fisheries NT Government.



Canid Pest Ejector

New Technology for controlling foxes & wild dogs



CPE devices and capsules now in stock and available!



We are pleased to confirm the final APVMA approvals to make available the 1080 capsules for the Canid Pest Ejector devices.

The two options are a 6mg loaded capsule for use where wild dogs are the primary target and a 3 mg capsule where foxes are the primary target. These doses are more than adequate. Both capsules are similar in price because the filling process, sealing, the capsule itself, packaging and regulatory cost recovery are significant contributors to costs compared to the fluoroacetate itself. However, it is only appropriate to use the dog dose if wild dogs are the prime target, as we adhere the principal of using minimal effective quantities of poisons.

The registration process has not been a simple task. Our work started in 2012 with APVMA consultations and stability studies required for new pack containing 1080 (plastic capsule). These studies also involved development of improved assays for 1080. Our registration submission in Oct 2013 detailed the packaging and stability information initially requested by APVMA. Work on designing an improved and cheaper bait head carrier and on pre-prepared bait lure heads also commenced. Ultimately, stabilised dried roo meat seemed to meet most requirements.

In January 2014 the APVMA requested additional environment information about the effects on non-target species, including Tasmania's devils, quolls, brush tailed possums, and some varanid and corvids. We felt this was an unusual request since the effects of 1080 on non-targets was reviewed by APVMA for 10 years previously and the dose and chemical was the same as in baits, but with the added need for mechanical strength to activate poison delivery. Nevertheless, a submission was provided by March 2014.

In April 2014 APVMA requested additional efficacy information which was supplied promptly, despite this device being used in the USA and approved by US EPA for some 40 years and tested

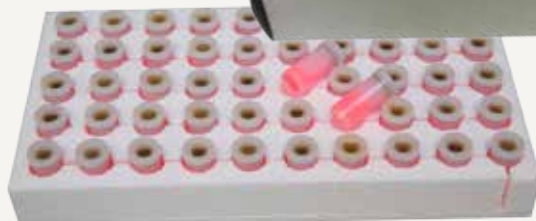


successfully under permits that were renewed in NSW over several years.

By May 2014 APVMA advised that the capsules had passed preliminary assessment but also that human safety and environmental reviews were required. In September 2014 an Environment review report was provided (supportive with minor label change) but in October 2014 we were requested to provide additional efficacy data. While the APVMA processes continued, we revised permit packaging and labelling of both the registered 1080 capsule and the CPE itself and ran several drafts of the ACTA advisory booklet past independent reviewers in four states. All

ACTA product booklets go through a review process with independent experts so we achieve the best stewardship possible.

By November 2014 we had progressed to final amendments and some fine tuning re chemistry and manufacture issues, then in April 2015 we were supplied with an unexpected Human Health assessment report that largely restated information from the 10 year 1080 review and which restated normal 1080 restrictions and label details. This enabled labels and MSDS sheets to be uploaded to the ACTA web site (see www.animalcontrol.com.au) and for announcements to be made in the CRC Feral Flier newsletter.



Registrations and final labels (based on earlier 1080 labels and not ideal) were approved on June 30th 2015. Surprisingly the APVMA levied full registration fees for the preceding 2014/15 financial year, even though we did not even receive advice of the successful registration until July 2015!

We are detailing the process so our readers have some appreciation of the work required to get even a simple new product approved. Bear in mind this is the same chemical, at the same dose, deployed at the same or lower rate in the field, in the same locations, for the same pests and available only to existing approved 1080 handlers with the same notification and distance restrictions in all states and after several years of successful use under permit in NSW and for more than 40 years in the USA (for a variety of actives). Even such a straight forward project has taken 3 years of regulatory process, costs and considerable duplication of existing knowledge.

Added to this, there is a requirement for state agencies to amend the local control provisions of pesticide orders in order to allow the States to adopt the product despite a National Approval. Fortunately, this is now well underway.

Having already redesigned and reduced costs for the bait head carrier we are working on decreasing relatively high cost of the USA sourced setting pliers that have been affected by currency devaluations.

It has been a long team effort to make the CPE available in Australia and we hope our readers appreciate the work that goes in to even a relatively "simple" new product.

In the end this is only a minor addition to the suite of options for wild dog and fox control and will not replace the need for baits (cheaper for large scale programs). However, the CPE approach does allow tethering of the toxin and provision of long acting sentinel baits stations that remain viable until triggered. This will be a useful feature to sustain fox free areas and for use along dog fences and the like.

Next, once PAPP is approved, we will look at adding a PAPP capsule to the range as an additional option, subject as always to APVMA approval.

Again we offer our thanks to all involved in the joint effort to bring these on line.



CPE product booklets are available now from ACTA.



AWI have supported the project by assisting in the production of CPE Training Kits to ensure the best possible stewardship of the CPE.



Train the Trainer

A final step, and a pleasant one, is to have project leader Rob Hunt, who has championed the cause for CPE's in Parks & Wildlife NSW for many years, to run a train-the-trainer workshop. The Canberra workshop is being organised by IA-CRC Wild Dog coordinator Greg Mifsud and is designed to equip and advise a few trainers in each state who can then provide information to Landcare and other users (in addition to the ACTA team).

Feral pig and human interface – an underestimated problem in the pipeline?

Feral pigs can reach over 100kg liveweight but are generally in the 20 to 50 kg range as adults. They can breed rapidly commencing within a year of birth in favourable conditions with a litter size of around six piglets, up to twice per year. Natural death rates are also high, so pig populations fluctuate widely between seasons. Some estimates in favourable seasons have more feral pigs than farmed cattle in Australia! In areas of high infestation, densities can reach 40/km².

Feral pigs are not a small problem.

Feral pigs have no natural predators and they can destroy native environments, cause crop damage and contaminate water sources by rooting and defecation. They prey on small native animals and young livestock. Pig related lamb losses of up to 40% have driven some former sheep grazing lands into other use over recent decades. Pig damage to crops is estimated to be around around \$100m annually.

Feral pigs are found in all states, but are most abundant in NSW, Qld and the NT.

About 40% of the Australian mainland possesses feral pig populations and the range is expanding.

While the risks posed by pigs noted above are relatively well known, it is their capacity to transmit disease that is perhaps the most dangerous aspect of the feral pig problem.

Pigs carry many diseases including: Leptospirosis, Brucellosis, Sparganosis, Melioidosis, Japanese Encephalitis, Murray Valley Encephalitis, Foot-And-Mouth disease (FMD), Nipah virus and Swine Fever.

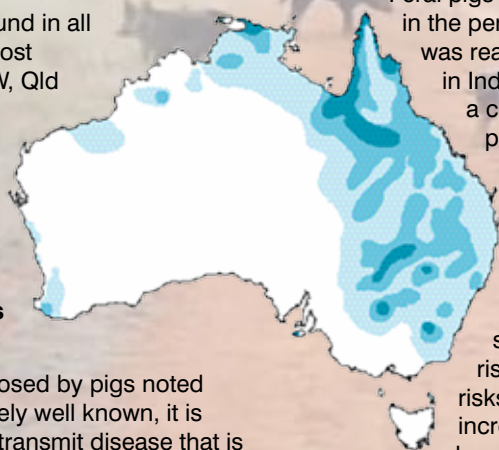
FMD is generally most severe in pigs and cattle. Should FMD successfully establish in Australia its transmission would escalate rapidly in the feral pig population,

with damage estimates of an FMD outbreak at around \$3 billion immediately and then between \$0.3b and \$4b annually. Feral pigs may also be able to contract and possibly transmit the Reston strain of Ebola virus.

Another relatively underestimated risk is from direct confrontation with humans (see page 5).

Lethal attacks on humans are not known in Australia, but experience in India indicates that this is possible, even though not common.

Feral pigs are increasingly seen in the peri urban fringe. One pig was reaching the Brisbane River in Indooroopilly by traversing a creek bed through this prime Brisbane suburb. Pigs are present in several national Parks. While direct conflict with humans is not yet commonplace we do not wish to sensationalise the risk, it is likely that risks to humans will increase as both human and pig territories merge through population expansion.



PIG ATTACK

In June 2015 a 22 year old woman was attacked in a National Park while trying to protect her family wolfhound from an altercation with a pig. The attack occurred in Mount Jerrabomberra in southeast New South Wales, near Queanbeyan and was reported on the ABC website on the 17th July.



Photos of injuries sustained by the woman who was attacked while trying to separate her family dog from a large feral pig.

Death by attack from a wild boar

Shahnavaz Manipady a,*, Ritesh G. Menezes b, Binaya Kumar Bastia aa Department of Forensic Medicine, Kasturba Medical College, Mangalore-575001, India
b Department of Forensic Medicine, Kasturba Medical College, Manipal-576104, India 2 November 2005

Abstract

“Attacks on humans by wild animals causing fatal injuries are not uncommon in rural and forest areas of India. But death occurring due to attack by a wild boar is rare. As the victims of boar attack are usually recovered from dense forest areas, the investigating officers could be misled as to the nature of infliction of these multiple, fatal penetrating injuries to a possible homicide. Unlike the injuries inflicted by wild cats, canines and bulls, the hallmark of boar attack is the infliction of multiple penetrating injuries to the lower part of the body. This case is reported for its rarity, for the awareness of the possible injuries in such unnatural deaths, and for the factors predisposing to a boar attack.”

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PIG v HORSE

The photo was taken on a mobile phone when a feral pig attempted to attack a horse and rider in NSW last year. The pig was angry and had already dusted off attacks by three working stock dogs.

While not yet commonplace, there is cause for concern that incidents of this type may increase as feral pigs approach the peri urban areas. Perhaps it is a matter of time before the confrontation between feral pigs and people become a higher profile story.



Panther sized cats

Stories of escaped panther sized cats are legendary in the bush but such large predators are unlikely to be roaming free, despite the folk lore.

However, quite large feral cats can occur and even the average feral cat is heavier than a fox. The photos below were taken by professional trapper and hunter, Dave Corner near Nowendoc, northern NSW in July 2015. His eager Mastif chased the cat up a large gum and Dave shot the cat there. Dave estimated its weight to be over 10 kg. The environmental damage this beast would have caused over time is incalculable.



Professional Vertebrate Pest Management Contractors adopt a national profile



The former Victorian Vertebrate Pest Managers Association Victoria (VPMVA) has now become a National Organisation.

ACTA is a participant and helped to set this group up. Members of this group must have the correct accreditations and licenses for various types of vertebrate pest management appropriate to each state. ACTA commends their extension to a National focus and supports their process to inform members and bring updates on new technology, new pest problems

and new administrative requirements on a regular basis. These are the people at the workface of **contract pest management** and can be relied upon for careful work. Professional practitioners like members of the VPMAA play an important role in conducting programs where landowners do not feel confident to do the work themselves. Their members can be contacted via
Web: www.vpmaa.org.au
Phone: 1300 257 774
Email: contact@vpmaa.org.au

Successful rodent management with MOUSEOFF® Bromadiolone

Our newest staff member, Steve Jordan (VIC, SA & TAS sales and service) has spent many years in the Pest Control Industry as a licensed technician and owner of a pest control business and knows what is required to effectively manage rodents. He stresses that they should be managed because of the damage and soiling they cause and because rodents carry several infectious diseases.

Steve has been involved with many trials testing palatability, effectiveness and toxicity in many different situations and notes that, in his experience, some rodenticide products don't tick all the boxes.

Mouseoff® Bromadiolone (MOBD) **DOES** tick all the boxes. It is available as a wheat grain and as waxy cereal blocks.

- 1) MOBD quickly controls all rodents, both rats and mice after a single feed;
- 2) MOBD is highly palatable to rodents and can be used in areas of other food sources e.g. poultry farms, commercial premises, stables, aviaries, fodder stores, etc;
- 3) MOBD is easy to handle and being individually wrapped they stay fresher for longer and are safer to handle.

- 4) MOBD is priced exceptionally well and gives good value for money;
- 5) The active ingredient Bromadiolone is a powerful (2nd generation) anticoagulant but has slightly reduced bioaccumulation risk compared to some other commonly available rodenticide products;
- 6) MOBD larger blocks 50g and 200g enable less blocks to be used in roof voids, wall cavities and bait stations therefore saving time.



First steps are to identify the problem. Looking for tell-tale signs like droppings, urine stains and gnawings will help you identify what the pest is. Rats tend to get into roof voids and nest in the insulation. They can chew through electrical wiring and junction boxes and cause house fires. Place MOBD blocks in the roof and check monthly and replace as required. Look

for entry points like overhanging trees, gaps in walls, weep holes, vents and stop access where possible. Roof tiles and iron overhangs to gutters are also entry points and can be sealed with vermin mesh.

Mice tend to be active under the sink (look for entry points around plumbing penetrations) or behind the fridge. These areas need to be baited with MOBD in lockable bait stations. Once again check bait stations regularly and replace bait as required.

Another active area is under raised houses and this needs to be baited with MOBD blocks in lockable bait stations. Also check the shed. Bait stations can be attached to external walls. Check bait stations monthly (high pressure) to 3-6 monthly (low pressure) and replace bait as required.

Ensure safety at all times by following label directions. We recommend use of lockable bait stations ensure that bait is securely held and is inaccessible to children and dogs.

Happy baiting !!



Using the HOGHOPPER™

The HOGHOPPER™ is a bait targeting device to minimise uptake of feral pig baits by non-target species. It is a development of the Invasive Animals CRC and distributed by ACTA under license. Royalties from sales help support continued investment in feral animal research and development.

The feedback from our customers on the HOGHOPPERS™ is extremely positive, but occasionally we are asked “When is the best time to bait?” or “Where is the best place to put the HogHopper™?” or “What’s the best method of baiting with the HogHopper™?”. One of the most important aspects of any baiting program whether it be for foxes, wild dogs, feral cats or in this instance, feral pigs, is to understand the ecology and biology of the target. This will help to determine when, where and how often baiting is required to achieve the greatest results.

Let’s have a look at three of the main aspects of the feral pig.

Diet of the Feral Pig

- Pigs must drink at least once a day in hot weather;
- They are opportunistic omnivores, consuming a highly variable diet;
- Pigs readily switch foods and feeding places and can travel large distances;
- They have high protein requirements, particularly when rearing young.

Behaviour of the Feral Pig

- They are most active from late afternoon to early morning;
- Their movement is affected by distribution of shelter, food & water as well as disturbances and topography;
- They generally travel on well-marked trails for feeding;
- They wallow in mud and dust to reduce parasite infection and for thermoregulation.

Common signs of Feral pig presence

- Rooting of soils;
- Holes under fences;
- Wallows and tree rubs;
- Tracks;
- Scats;
- Carrion consumption.

When is the best time to bait?

The best time is when alternative food and water supply is scarce, this is when feral pigs will be more likely to eat baits and it is likely that they will congregate into particular parts of landscapes. There is no fixed time, but common preferences are Autumn in the eastern hill country regions of Australia, or at the end of the dry season in our tropical regions in Northern QLD or the NT when water is very scarce.

Where is the best place to put the HOGHOPPER™?

Identify feral pig hotspots in the target area based on historical records, preferred habitat and pig resource requirements. Assess each hotspot for fresh feral pig activity for example tracks, scats and rooting (see pictures). If pigs are active in the area, assemble your HOGHOPPER™ where feral pigs are most likely to encounter it. If using multiple HOGHOPPERS™ be sure to place them far enough apart so the same mob of animals are not feeding from multiple stations. It is not possible to prescribe set distances between stations, although a general rule is to place a HOGHOPPER™ at hotspots, no closer than 1 kilometre apart. Motion-sensing cameras are useful in determining whether the same mobs are feeding from multiple bait sites. Always place your HOGHOPPER™ in a shady location under trees or bushes (near water). Cooler temperatures will prolong the life of bait material and feral pigs will feel less exposed whilst feeding. On public land, HOGHOPPER™s should remain out of sight to avoid tampering by the public.

What’s the best method of baiting with the HogHopper™?

It is recommended that a baiting program should consist of a period of free feed baiting followed by toxic baiting.

Free feeding using the HOGHOPPER™

Set the HOGHOPPER™ to the free feeding position with the doors latched open (see image below right).

The free feed period is vital for a successful baiting program as this is when feral pigs become familiar with the HOGHOPPER™ as a source of feed.

Skipping this stage and closing the doors from the outset of the baiting program may result in pigs failing to access baits.

Don’t be concerned if pigs do not begin to feed immediately, often grain and baits are quite foreign feedstuffs for feral pigs, so they will be cautious to commence feeding. Continue to deploy free feed grain or PIGOUT® Free Feed Feral Pig Bait for at least 5 to 7 days before you start your toxic baiting, if required encouraging bait up-take use Carasweet® or Molasses. When you see most of the population are consistently feeding from the HOGHOPPER™ and feed uptake is consistent, move onto the toxic baiting.

Toxic baiting using the HOGHOPPER™

Remove any remaining free feed bait material from the HOGHOPPER™. Load the HOGHOPPER™ with sufficient toxic PIGOUT® Feral Pig Baits or other toxic grain bait based on the volume of free-feed bait consumed in the free feeding period. Continue to use toxic bait PIGOUT® Feral Pig Bait or other toxic grain until bait uptake ceases which can be typically 3-4 days.



© Photograph Jason Wishart



HOGHOPPER™ in Free-Feed mode
© Photograph Jason Wishart





FOXECUTE®
Fox Bait

PAPP project update



DOGABATE
Wild Dog Bait

After 11 years of effort by the IA-CRC and ACTA with help from Connovation (NZ) and funding support from AWI we can finally say that the fox and dog versions of the PAPP baits are finally at the very last stages of regulatory approval.

The original project objective was to have new products that were less restricted compared to 1080 products (though not freely available) to increase participation in baiting programs and to better manage foxes and wild dogs particularly in peri urban areas, where use of 1080 is limited by regulations.

It has taken about 3 years to clear the regulatory process but it is normal and proper to have a very thorough examination of any entirely new chemical being used for the first time in an agricultural product. This is the first new vertebrate pesticide chemical for fox and wild dog control in several decades and it has been achieved with a lot of help from a lot of people. ACTA especially wants to acknowledge the initial work on the concept and non-target safety by Clive Marks, subsequent work by Pestat for the former PAC-CRC, inputs of several LLS groups, Lee Allen, Ben Allen, Guy Ballard, Peter Fleming, Andy Murray and numerous landholders plus finally the inputs of Simon Humphrys and ICP Fire Fly who did the transdermal absorption work needed to complete the toxicology package. None of this would have been possible without the funding of the Australian sheep industry via Australian Wool Innovation. Their patience in supporting the long process of research and registration is gratefully acknowledged. None of those involved expected it to take so long at the outset!

Key aspects of the registration review:

The efficacy reviewer recommended approval of PAPP baits but did not support aerial deployment, due to a lack of trial data on this technique. Likewise, Environment Australia (EA) also

recommended approval of PAPP baits but was opposed to aerial deployment on the grounds that PAPP, unlike 1080, does pose a risk to varanid species. EA also requested some additional wildlife precautions on the labels. The Office of Chemical Safety and Environmental Health (OCSEH) looked at the risks of the new chemical to users and recommended that PAPP and products containing PAPP be scheduled as S7 in Feb 2015. We were given an opportunity to comment on this decision before the Australian Committee for Chemicals Scheduling (ACCS) met in March 2015. Three submissions were made to ACCS that agreed to an S7 classification for PAPP chemical concentrates, but requested that finished baits containing only a small amount of PAPP be scheduled as S6 products (similar to the status of pindone for rabbit management). Surprisingly however, when the final ACCS ruling came out in June 2015, it was to further restrict access to PAPP baits by classifying PAPP and products containing PAPP as **RESTRICTED S7**. This means that PAPP is in the same category as 1080.

We would prefer a learn-by-doing approach where the chemical is stewarded and then, if problems are found, a further tightening of controls can be implemented. We submitted that normal label warnings such as "dangerous if swallowed", "Keep out of reach of children" and "Dangerous Poison" and other risk management statements on the labels were sufficient, as for many household chemicals, to mitigate risks. This is why we have labels after all. We also submitted that the acute toxicity fitted into S6 criteria

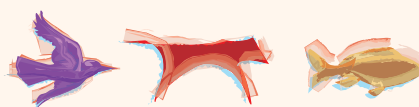
and that the availability of an antidote was also a criteria for S6 classification. The science based arguments for S6 scheduling for finished products were not accepted and as a result, PAPP baits will be no more accessible than 1080 baits.

Next steps:

We have incorporated scat marker beads into the baits to enable Vets to discriminate whether an accidental poisoning has occurred (red beads for 1080 and yellow beads for PAPP). The IA-CRC is also working towards the approval of the antidote for PAPP by the APVMA as a veterinary medicine and making vials of this product available to all Veterinary practices. We are working together to give background technical information to Australian vets and vet schools. The antidote can reverse the effects of PAPP rapidly, but must be administered quickly by intravenous injection, so we urge all users to take the usual care to prevent pet/working dogs from accessing baits as they have been formulated to humanely kill wild dogs and foxes rapidly.

As is normal for ACTA products, we will produce a user advisory booklet that will be available with the new products. State agencies have also commenced amending State Control-of-Use regulations to allow supply and use of these new options for wild dog and fox management.

ACTA is ready to commence production and with luck the baits will provide an additional option by late 2015 in time for the 2016 autumn lambing season.



Invasive Animals CRC



ACTA has been working closely with both the IA-CRC and AWI

ACTA sponsors Australian Vertebrate Pest Conference

ACTA was, again, a major (gold) sponsor of the Australian Vertebrate Pest Conference held in Brisbane in May 2014. The AVPC provides the leading forum in Australia to bring scientists and practitioners together. To this end we also sponsored the 6th ACTA Award for Excellence in Pest Animal Management which was awarded to Sue Metcalf of the Chittering Landcare Centre in WA. The award acknowledges people at the field level who are taking an enlightened approach to the hard work of on ground control programs. Sue has done a great job, as many will know, in bringing groups together to take a measured, integrated but relentless approach to a suite of pest animals in the peri urban fringe of Perth. Sue gave a spirited presentation of her work to wide acclaim. Congratulations!

The ACTA stand showcased a number of new innovations in the war against our feral pest animals.

The presence of several representatives of USDA also allowed increased interactions on feral pig bait and rodent research projects, as captured by this discussion of trials between (L to R) Dr Kurt Vercauteren (USDA), Prof Linton Staples (ACTA) and Dr Simon Humphrys (IA-CRC) as well as some less serious interactions with CRC staff masquerading as pest animals.



ACTA and IA-CRC participated in recent Victorian Rabbit Management Conference held by Vic DPI

In recognition of the increasing problems of rabbits in Victoria the VIC DPI recently ran a forum to bring the latest knowledge to many groups involved in the important battle to keep rabbits in check. Participants heard about new regulations, the status of the problem, progress towards new strains of calicivirus and of increasing resistance to existing strains.

ACTA part sponsored the forum and appreciated the acknowledgement given. Chris Roach and Ian Senior from ACTA were also able to showcase our proven range of rabbit control options under the proven RABBIT® name.



ACTA catalogue distributed to all merchants and agencies

2015 has seen the launch of the Canid Pest Ejector (CPE) capsules and further progression on the PAPP bait registrations. We have also launched the new ACTA Product Catalogue.

The ACTA Catalogue, supplied in a dedicated ring binder that allows easy updates, provides information on all ACTA products. In time we will send updates for the rules and regulations for toxins such as 1080 that are applicable to your State. We will also add a list of answers to frequently asked questions to help you provide a comprehensive service to your customers and landowners.

If you have any suggestions on how to further improve it as a resource, don't hesitate to let one of our team know.

Don't forget to ask Steve (VIC/TAS/SA), Chris (NSW/ACT/WA) or Jamie (QLD/NT) for your copy! Alternatively telephone the office on 03 9308 9688 and we'll get the ACTA Catalogue sent out to you.



Calici virus - now a complicated story

There is a major and increasing problem with rabbits in Australia and we should continue to use conventional and biological control methods in an attempt to at least aim for local eradications.

One of the early virologists who was involved in research of myxoma virus, the late Prof. Bunny Fennessy, said, at a dinner to celebrate 50 years of suppressed rabbit numbers since myxomatosis, that *"Australia was lucky to have a target specific bio-control for rabbits (myxoma) and even more lucky to have two specific biocontrol agents (referring to the recent escape/release of the Czech strain of Rabbit Haemorrhagic Disease Virus (RHDV1) in 1995/6. He continued: "however it is very unlikely that our good luck would continue to a third bio-control option."*

Some years on, Dr Fennessy may well be proven wrong as we now have many locally derived variants of the original RHDV1 strain plus, more recently, two quite different strains now in circulation. The origin of these new strains remains uncertain and apart from the obvious question as to Australia's biosecurity, the presence of these two new strains may have many implications for effective rabbit management. The first of these is a Chinese strain of RHDV1 that was apparently discovered in northern Sydney in late 2014. The second was found near Canberra in May 2015 (the RHDV2 strain). As a result of excellent work at CSIRO, added to this mix of different viruses is the isolation and identification of a pre-existing benign strain of calicivirus (called RCV) that tends to immunise a

significant proportion of rabbits against other RHDV1 type strains. After a number of years research into overseas strains of caliciviruses, it is now also proposed to release a Korean strain of RHDV1 (known as K5) with the aim of "boosting" virulence to hopefully overcome antibodies to the circulating variants of the original Czech strain and the immunising effect of the pre-existing benign RCV strain.

The impact and extent of spread of RHDV2 in Australia is not known, but in Europe it has spread rapidly since discovered in 2010 and it seems to replace other strains. RHDV2 also infects at least two species of hare, which is a new development in the otherwise highly specific lagomorph calicivirus host range story. RHDV2 can infect younger rabbits and can overcome vaccines. It can also overcome antibodies to RHDV1 strains, so may ultimately add to the decline of rabbits in Australia. However, it has been reported to also cause a more prolonged clinical phase inducing protective antibodies in survivors which may then be protected against RHDV1 types, including the original Czech strain, its field derivatives, the Chinese strain and perhaps even the proposed Korean K5 strain yet to be released.

So where to from here?

We now have many competing variants of calicivirus out there and a four or five way tussle for the livers of susceptible rabbits. The outcome is now hard to predict and will be a balance between virulence, transmission, resistance, mutation and antigenicity for antibody production. We are raising the issue (though we have not been closely involved since doing the original registration cases for the Czech

strain in Australia and NZ in 1996) as one possibility is that we may be heading for a static situation where, overall, the impact of all caliciviruses is lessened. No sensible parasite destroys all of their own hosts, so our feeling is that, in time, we may have continued RHDV presence, but with lower overall impact. Time will tell, but unravelling all the factors in this viral 'alphabet' soup will not be easy.

If we are on the brink of a "bio-failure" we recommend that, if rabbits are already in low densities as a result of season, myxoma or any of the caliciviruses, then this summer and autumn may provide an opportunity to also bait, rip and fumigate warrens, and shoot residual rabbits in an attempt to deplete large areas. Leaving immune seed populations is a dangerous strategy and it is too easy for land care groups, governments or individual landowners to feel satisfied with "low" rabbit numbers for now.

We have had low rabbit numbers due to successful biocontrol for half a century, but rabbits do have a capacity to bounce back with a vengeance. Current generations have not the memory to appreciate the colossal impact rabbits once had in Australia. The rabbit, above all of our pest problems, has the capacity to turn large parts of Australia back into unusable desert, so there is no room for a complacent approach.

Boom-bust pest management is not the way to go if we are to really save seedlings, prevent erosion and maximise agricultural outputs.

For those interested in reading more about the various RHDV strains the links below will take you to some key papers.

https://www.vpb.nsw.gov.au/sites/default/files/images/News_20150828_DPI_CVO_Bulletin2_RabbitHaemorrhagic.pdf

www.idt-animal-health.com/veterinarian/rabbit/diseases-rabbit/rhd/aetiology/rhdv2/

www.vpb.nsw.gov.au/sites/default/files/images/News_20150716_DPI_CVO_Bulletin_RabbitHaemorrhagic.pdf

promedmail.org/direct.php?id=20150708.3494836

www.oie.int/wahis_2/public/wahid.php/Reviewreport/Review?page_refer=MapFullEventReport&reportid=18075

www.virologyj.com/content/4/1/96

MOUSEOFF®

Zinc Phosphide Rodent Bait

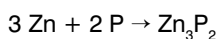


MOUSEOFF® Colour variation

One of the most common queries we get asked in respect to MOUSEOFF® Zinc Phosphide Bait relates to the colour of the bait. Most users are accustomed to the bait being a very dark, almost a black colour, but sometimes the bait is a lighter grey.

This variation is not caused in the bait manufacturing process, but in the actual manufacturing process of Zinc Phosphide.

Zinc phosphide (ZP) is made by reacting zinc dust with hot yellow phosphorus under controlled conditions.



It is a fiery reaction and the ZP that results from the reaction can have a purity range from the low to mid 80's to around 95% concentration. As a result of this variation, ZP is diluted by adding varying amounts of inert iron oxide to the product to achieve a standard purity of 80%. Pure zinc phosphide is light to mid grey in colour, but iron oxide is a strong jet black colour (it is also used to colour concrete).

It is the presence or absence of the inert iron oxide that causes the colour variance, but the ZP is always 80%. Thus, the variable colour of the coated grain product is normal QA at work and has no bearing on the activity of the manufactured bait products. Lighter coloured baits are dosed just the same as the blacker ones.



The normal variances in colour can clearly be seen in the ACTA triplicate batch retention samples here.

Proper storage of mouse bait is important

The storage instructions on the label of MOUSEOFF® Zinc Phosphide includes the following **“Store in the closed original container in a dry cool well-ventilated area out of direct sunlight. Store in a locked room away from children, animals, food, feedstuffs, seed and fertilisers. Store away from acids, water and any sources of heat or ignition.”**

We understand that it is not always easy to ensure that the bait is stored in a dry cool well-ventilated area but it is important to do so. We have

recently found that when bait is stored outside in direct sun and subject to extreme temperature variations over long periods, it is possible that the wheat grain may sweat moisture that can condense inside the storage container.

If this condensate drips down onto the top surface of the bait it can cause some breakdown of the zinc phosphide and the top layer of the bait can degrade. (see photo below) This is a rare event, but as we head towards summer we recommend that you check that your bait is correctly stored.



ACTA loses one of our most tireless workers

We are all saddened this year to learn that our long time sales representative Barry James had been stricken with cancer. Barry died early this year after a short illness. Barry had already shown remarkable strength and focus to all but overcome the impacts of serious stroke some years back and it seems unfair that he had to face yet another major challenge.

Barry was unique. His humour and good nature were highly infectious with the ACTA team and our customers. He was the life of every party with his famous one line jokes such as "I have to take a nurse with me to the bathroom as I am not allowed to lift heavy weights" or "Hello, I am Barry the battler from Brisbane, you should be pleased to meet me".

He also displayed unending enthusiasm for our products and the need to communicate their benefits to merchants. Barry retired from active duty after the stroke but we still get calls from people who want to see him and wonder why he is late with his visit schedule. He had a remarkable impact across Australia and his loss has saddened us all. "Rest in peace Barry in the knowledge that you did a great job and are well remembered".

Linton Staples, all the ACTA team and 1000 rural merchant agronomists!



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