

Like all landowners we battle with increasingly regulatory constraints and compliance inertia in an area where wild swings in climatic conditions lead to eruptions of pest problems that often require action. We wonder if regulators appreciate the need for better facilitation of pest management as distinct from further regulation. Imagine if landowners recovering from droughts, floods and locusts had also been overwhelmed by vertebrate pests such as wild dogs, feral pigs, foxes, plague rats and mice! This threat remains, despite the recent focus on climatic disasters. In fact, the recent wet conditions have been favourable to snails, slugs and mice in southern states and to rats and feral pigs up north.

To our judgement, the management of pest animals in Australia is still too entrenched in a reactive approach rather than a proactive approach – even though the latter has been sensibly promoted by many on-ground agencies over many years. For example with mouse management there are indications that a preventative approach could be taken if we can get approval for lower applications rates or the co-administration of MOUSEOFF® with other products or fertilisers. ACTA has a research effort underway on these options to further reduce bait and spreading costs to save greater areas of crops.

Over the last 18 years since the first commercial release of FOXOFF®, ACTA has proven itself to be a consistent and reliable supplier of existing and new technology to the vertebrate pest field. When one allows for a saving of crops from mouse infestations the protection of cane crops from plague rats with the RATTOFF® project, the destruction of rabbits with pindone and 1080 versions of RABBAIT® oats or carrots, or the saving of stock via effective FOXOFF® and DOGGONE® programs, we estimate that this small company has contributed more than a billion dollars of benefits to the rural communities of Australia. With the release during 2010 of the new high tech Delicia SLUGGOFF® lentil bait, we now have the world's best method for control of all species of slugs and snails in all crops and horticulture. There is simply no need for the relentless march of introduced snails into new cropping areas.

Though we are proud of our achievements we could still do more. The pests

still threaten, so there is no room for complacency! The difficulty is to cost-effectively service a relatively small scale market that is spread so widely, while at the same time deal with the compliance overheads of these critical technologies. It is also a market that is impeded by overly restrictive constraints on the access and use of pest control products. The industry is also beset by much witchcraft and folklore that will take decades to delete from the memories of landowners, agencies and regulators.

We need to work at all levels to simplify the paperwork that is restricting effective pest management.

Yet there is also some good news. The Invasive Animals Cooperative Research Centre has focussed very effectively on training new post graduates to enter the pest management field and on new technologies. These could not have been developed without selfless contributions from the many institutions, rural industry groups and government funding agencies who collectively make up a IA-CRC. It is remarkable to have a new targeted 1080 feral pig bait (PIGOUT®) and the potential of an entirely new toxin for feral pigs in HOGGONE® and the new PAPP baits for foxes and wild dogs approaching regulatory review. This is a tribute to the CRC approach to bringing people and organisations together. We will shortly have a wider range of options and, hopefully some that have less restricted access. This will be a lasting testimony to the massive work done by the IA-CRC and its participating partners.

Another area of achievement over the last few years has been the inclusion

of merchant agronomists into the pest management agenda. These “troops” have long assisted landowners with insect and fungal pest problems but have generally not been involved in vertebrate pest management. A lot remains to be done with training and increasing the pro-active approach, but to have about 1,000 graduate agronomists involved at the farm gate level must surely increase the total resource for vertebrate pest programs. We also take this opportunity to also report on some staff changes and expansions to further assist our partners and landowners to maintain their efforts to manage Australia's vertebrate pest problems.

We hope everyone enjoys the ACTA newsletter and has a great recovery in 2011 from the challenges of drought and flood during the last few years.



ACTA product range grows..



FOXOFF®
Fox Bait



RABBAIT®
Pindone Oat Bait



MOUSEOFF®
Bromadiolone



RATTOFF®
Rat Bait



DENCOFUME®
Fumigation Cartridges



RABBAIT®
1080 Oat Bait



PIGOUT®
Feral Pig Bait



MOUSEOFF®
Zinc Phosphide Bait



DOGGONE®
Wild Dog Bait



SLUGGOFF®
Slug & Snail Bait

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Staff changes at ACTA

ACTA has been proud to be able to provide long-term service to all of our customers and research partners over many years. However, after 10 years of dedicated service, Michelle Smith has returned to Queensland to be closer to family and Kym Crozier has taken an opportunity to further her career in the solar industry. We wish them both well and thank them for a fantastic contribution to ACTA and to the management of pests in Australia. Their skills, energy, good humour and commitment will be missed by all. On a sadder note our Qld sales manager, Barry James, suffered a serious stroke last year which hospitalised him for several months. Barry has retired to recuperate, but the good news is that he has also maintained a focus on recovery and with customary determination he will continue to improve. We wish him well for an ongoing return to good health and his passion for guitars and drums. Well done Barry!

Michelle has been replaced by Ebony Arms, who took up her role as R&D and Regulatory affairs manager in early 2011. Ebony has a farming background (dairy) and has experience with DPI in Victoria and also with a major multinational. She brings a wealth of talent and energy to the regulatory process. We have also appointed a NSW area sales manager Chris Roach to join Craig Wood (who services Vic & SA) and Phil Morrow in sales and technical service. We have also been fortunate to attract Jamie Dennison to become our area manager for Qld and NT. All have extensive agricultural, Ag business and horticultural experience as well as sales and marketing skills, so we hope to further improve our customer service to both merchants and government agencies. We hope all our readers will make the new staff welcome as they get around to meet and greet and hopefully learn how we can serve you better.

Kym's role of customer service and logistics has been split between Belinda Minutolo and Toula Larosa at Head Office in Melbourne.

It has been a busy year of changes and while we will miss such long term contributors we look forward to the new appointees bring new vigour to all of our endeavours.



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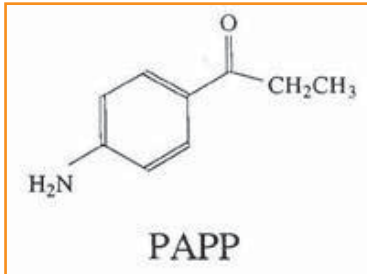


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PAPP successfully incorporated into FOXECUTE® and DOGABATE® baits

As the registration submission for the new PAPP baits draws closer, we thought our readers would appreciate a brief update on the project.

Para-amino propiophenone (PAPP) induces formation of methaemoglobin within red cells. Despite its complex sounding name it is a relatively simple compound based on aniline.



Methaemoglobin is the oxidised form of haemoglobin, but is unable to transport oxygen to tissues. For oxidation of haemoglobin to methaemoglobin, PAPP must first undergo biotransformation within the liver where it is converted to para-hydroxy-aminopropiophenone (PHAPP). There are differences between species in the metabolic pathways for metabolism and excretion of absorbed PAPP. Dogs, foxes, stoats and cats have a higher capacity for PHAPP production than many other species. Most species metabolise PAPP primarily to non-toxic derivatives for excretion in urine. Also there are differences between species in the protective capacity to reduce methaemoglobin back to normal haemoglobin, using the enzyme *methaemoglobin reductase*. Thus, there are at least two metabolic pathways that give rise to some species specificity in susceptibility to this poison, with canids being highly vulnerable. The toxicity of PAPP for canids was recognised by US authorities, as a possible means to improve the management of coyote predation, but the early work was not progressed.

Since PAPP is rapidly metabolised and excreted, a sub-lethal dose causes no long-term effects. In addition, the effect of PAPP in dogs can be overcome by any agent that reduces methaemoglobin back to haemoglobin. The common antidote, methylene blue, is orally and intravenously effective. While prompt attention is needed, it is expected that the availability of an antidote, will attract many landowners to fox control, who are otherwise nervous about risks to dogs. The dose rate of PAPP known to be effective for a fox bait is a marginal dose for a larger dog, so conferring some

dose specificity even between canids. This reduces the risk of dog death from accidental ingestion of a single fox bait.

All of the established and well-proven recommendations and procedures for routine fox baiting with baits such as FOXOFF® are to remain the same with the use of FOXECUTE® baits as it is only the type of active ingredient that is being changed.

We hope that PAPP will not be a restricted chemical product and, if accepted by relevant authorities, this will reduce the paperwork and permits required for farmers to tackle wild dogs and foxes. This will potentially revolutionise the approach without any additional risks.

Space does not allow a full description of the testing program that has been conducted, with AWI support, over many years with the IA-CRC and numerous other agencies and companies participating. It has been a long and tortuous path but the end is in sight!

The testing has validated reliably effective doses for both foxes and wild dogs and field trials have confirmed that the FOXECUTE® baits containing PAPP give control outcomes at least as good as the traditional 1080 baits with 100% mortality in all ages, sexes and liveweights of foxes in tightly controlled pen studies. Likewise, DOGABATE® baits containing PAPP were 100% lethal to wild dogs under pen conditions.

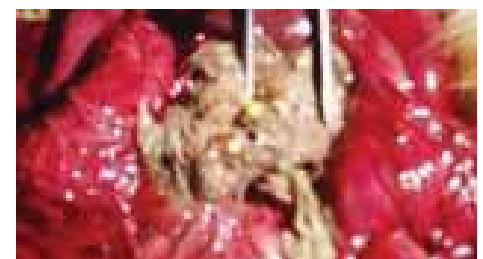
Residue studies have confirmed that there is virtually no risk of secondary poisoning due to the low content in tissues and the rapid degradation of PAPP in most species. Recovery from sub lethal exposure is fast and complete. In fact, to make PAPP work it has been necessary to ensure rapid release and absorption of the total bait dose so the existing FOXOFF® and DOGGONE® bait matrices have proven very reliable delivery vehicles for PAPP and ones that also provide extended shelf life.



In some trials we are finding carcasses as PAPP causes the animal to sit down within half an hour, and quietly die within an hour or so, due to lack of oxygen to the brain. This process is as humane as the use of carbon monoxide and has been well supported by welfare groups who have participated in some evaluations.

Necessarily the registration of a new chemical is a complex, expensive and slow process and we are in the final stages of obtaining some additional toxicological data to enable proper review by APVMA and associated agencies.

The bottom line is that, while final registration is not guaranteed at any time, we hope to have favourable news by the end of this year – provided the missing data now being generated provides a way through the chemical approval process. We will provide much more extensive updates as we approach marketing of this exciting new technology for both fox and wild dog management. We also take this opportunity to thank the many state and federal agencies and cooperating partners of the IA-CRC who have shown such commitment and patience as this project has been progressed.



Freshly dead carcass containing bait marker beads in field trials in NSW. This confirms both bait uptake and lethal efficacy

Curlewing the NSW landscape

The Bush Stone-curlew, *Burhinus grallarius*, is a most interesting and secretive bird, standing between 50 and 60 cm tall. It has long thin legs with thick knees, which gives rise to its alternative name of "Bush Thick Knee". It has a short dark bill, large yellow eyes, and mottled brown, white and grey plumage. They are nocturnal birds, and tend to lie or stand motionless hiding in woodlands during the day. Their presence is most often indicated by a distinctive whistling and wailing 'weer-lo' call that is usually heard after dark.

The Murray Catchment region in southern New South Wales is one of the few remaining areas of South Eastern Australia to have any of these birds left in the wild. There are several factors that have been involved in the decline of the Bush Stone-curlew, but the lack of recruitment of any young chicks, their vulnerability to predation, particularly



by foxes, and the loss of their preferred habitat are recognised as being the major issues. They are listed as endangered under the NSW Threatened Species Conservation Act 1995 and in 2006 the Department of Environment and Conservation in NSW put in place a NSW Recovery Plan for these birds.

A group of keen landholders within the Murray Catchment, called the Nature Conservation Working Group (NCWG), with the help of funding from the NSW Environmental Trust, are undertaking a conservation program that involves fellow farmers to fence out, preserve, restore, and protect remnant habitat areas of grassy box woodland.

With the predation of chicks being a known cause of the demise of the Bush Stone-curlew NCWG has found two styles of electrified fences that reduce losses. The first style comprises a 45 degree offset series of 3 electrified wires and 2 plain wires mounted onto an existing paddock fence, but

with smaller dimension cyclone wire. The second style is a 2mt high chicken netting fence with two electric standoff wires and a 200mm netting skirt at ground level to stop foxes from digging underneath the fence.



Fox baiting, using both FOXOFF® prepared baits and 1080 treated chicken wings are conducted during autumn and spring and has proven a successful method of controlling the local fox population. The participating farmers are encouraged to follow up their baiting programs with spotlighting and shooting to destroy any bait shy foxes on their properties.

In addition to undertaking on-ground conservation works, a publicity and education campaign has been conducted, with field days, educational displays, brochures, and stickers. This has helped raise the general public's awareness and understanding about the plight of these rare birds.

The NCWG also runs a licensed captive breeding program to assist the long-term viability of the few remaining wild Bush Stone-curlews within the region by supplementing their numbers with young captive bred birds. The breeding program was the idea of Neville Lubke, a local landholder within the Murray Catchment, and was started in 2002 at Jindera.

With NCWG's assistance Neville and Jan Lubke, along with another keen landholder, Peter Redfearn, have built two captive breeding facilities, one located at Jindera, which houses four breeding pairs of Bush Stone-curlews, and the



other at Moulamein, which contains another five pairs of breeding birds. These two breeding facilities are now well established and currently produce 10 to 15 chicks each year. The original parent birds were sourced from Zoos, Sanctuaries and Fauna Parks located in New South Wales, Victoria and South Australia.

A soft release program with the young captive bred Bush Stone-curlews has been achieved with the help of the Murray CMA and Murray Irrigation Ltd. A large release aviary was erected within a 25ha predator proof enclosure at Moulamein. An area of 15,200ha surrounding this release site is regularly baited by the property owners twice a year for foxes as part of the 1080 fox baiting program implemented by the NCWG.

Two to six months prior to release all the fledged captive bred Bush Stone-curlews from both breeding facilities are moved into the release aviary to allow their natural socialisation and flocking behaviours to develop. Within the release facility the young Bush Stone-curlews have exposure to their surrounding environment, while protected from resident predators. They also have free access to naturally occurring insects which move through the wire into the aviary.

Each bird is health tested, ABBBS leg banded and fitted with a tail transmitter for monitoring purposes, and these detach during the bird's next moult.

The long awaited first release of 15 captive bred Bush Stone-curlews occurred at Moulamein in NSW during October 2008 and a further 11 released in 2009 and 12 more in 2010. The release birds were radio tracked and visual observations and call playback surveys have been undertaken and recorded. Local landholders were also encouraged to report any sightings they make of Bush Stone-curlews on surrounding properties in the area.

The majority of these Bush Stone-curlews have adapted well to their new environment. The Bush Stone-curlew captive breeding and release program is a result of a unique collaboration between the NCWG, the Murray CMA and a group of local landholders. They have worked in liaison with Melbourne and Adelaide Zoos, Healesville Sanctuary, Featherdale Wildlife Park, Buller's and Kyabram Fauna Parks, local LHPAs, DECCW, NSW DPI, CSIRO, CSU, Dr Tony Gestier, radio tracker manufacturers and private environmental consultants, and have been generously supported by funding from the NSW Environmental Trust, the Murray CMA, and Murray Irrigation Ltd. Together they have all achieved a New



South Wales first, the successful release of captive bred Bush Stone-curlews back into their wild habitat.

For further information about this exciting and successful program contact

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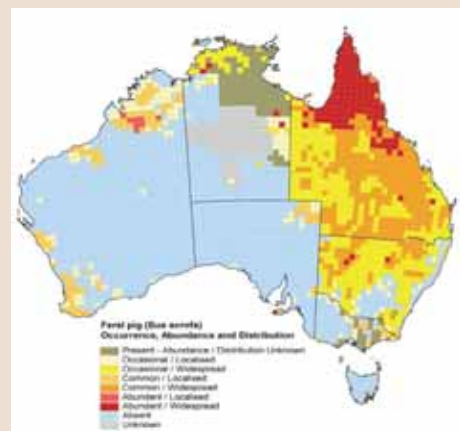
HogHopper™

and PIGOUT® Feral Pig Bait



This is not a small headline, but we are confident that the development of the “Hog Hopper™” by Steve Lapidge and Jason Wishart, at the Invasive Animals CRC team in Adelaide, has filled a missing piece of the puzzle for feral pig management.

For many years Australia has relied on the use of 1080 baits as a primary method of feral pig control. However, during the development of the highly targeted PIGOUT® bait to effectively deliver 1080, it was found that alternate methods such as grain and meat baiting for pigs posed an unacceptably high risk to non-targets at some sites. While the risk from PIGOUT® was considerably lower (independently demonstrated with over 5,000 monitored bait nights in a wide range of habits and non-target risk areas), it remains possible for non-targets to be adversely affected by feral pig baiting programs. This has limited the ability of land managers to adopt baiting programs for feral pigs.



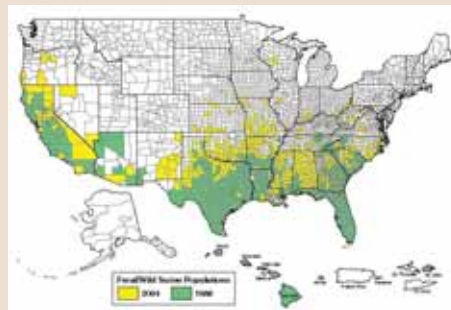
The IA-CRC team have since put their minds to the problem and have been able to come up with a delivery system that allowed access to bait only by feral pigs. The first wire mesh version tested was c



The latest version is called the HogHopper™ and this device is now capably manufactured by two Australia sheet metal fabricators, who have assisted with design refinement and scale-up.

The HogHopper™ has two slide-up weighted doors that a pig must lift with its snout to gain access to baits dispensed from an internal bait hopper. Tests have shown that no other animals have the power or dexterity to perform this lifting function.

The concept has now been expanded to the USA where feral pigs pose similar problems to Australia, with 44 States having feral pig populations and some states such as Texas, Louisiana and Florida facing massive feral pig problems. However, in America non-target concerns are even greater than they are here, as America has numerous native omnivores such as racoons, collared peccaries, bears and opossums that they do not want to see adversely affected during pig control programs.



Associate Professor Steve Lapidge recently spent three months with the USDA National Wildlife Research Centre at Denver on a prestigious Fulbright award exchange program. During this time, he promoted the concept of the HogHopper™ and also the new HOGGONE® baits being developed by the IA-CRC with ACTA (see separate article).

Enabling focussed efforts to manage the worlds feral pig problems



IA-CRC & ACTA are collaborating with Dr Kathleen Fagerstone's group at USDA

Trials have already commenced in the USA with collaboration from various state USDA Wildlife Services agencies. ACTA is also funding additional toxicology trials in conjunction with USDA at highly skilled US laboratories. The new data will be of value in all countries as we start the registration process for the new HOGGONE™ baits.

The final field efficacy trial in Australia demonstrated that the HogHopper™ can be used to reduce feeding feral pig populations by 100% whilst delivering PIGOUT® baits.

As with any new technology, some teething troubles were discovered during the USA trials. Their pigs found entirely new ways to damage and jam the prototype HogHopper™ (see photo) but the design team and manufacturers in Australia have already made a number of improvements to the initial design which will strengthen key points and prevent these problems.

US trials showing Racoons unable to access baits



ACTA are proud to be part of this excellent cooperative approach and we thank the manufacturers for contributing some tremendous design expertise at short notice. Perfecting the product has delayed the release of the HogHopper™ by a few weeks but we believe the investment in design refinement will give much longer and safer operation of the dispensers. The HogHopper™ was first launched at the AWMS meeting at Torquay in December 2010 (see photo) and was warmly received.

Every consideration has been given to functionality, reliability and weight, as well as freight and assembly convenience in the HogHopper™ design, so the hopper will provide a useful and reliable tool for repeated use in targeted pig control programs over many years. The powder coated aluminium construction will not rust and the units can easily be relocated between control programs.

The combination of the HogHopper™ delivery system, with the highly target specific 1080 PIGOUT® bait offers a reliability and convenience not yet seen in pig management.



We hope that this will overcome the many fears that have previously restricted the adoption of baiting as a cost effective feral pig control technique.

With the recent extreme wet conditions throughout several states, all experts agree that the feral pig population has potential to explode over the coming months. Most recognise that the breeding response of pigs is very high as they can produce near two weaned litters in one year under ideal conditions, and each litter will contain an average of six piglets.



Rapid breeding of feral pigs is a concern

Clearly, the pest management authorities and industry groups such as the Australian Pest Animal Management Program and Meat and Livestock Australia Ltd have responded to the threat and thankfully support this work of IACRC partners to get new options for pig management as well as improved adoption of existing techniques.



All feral pigs in groups are able to access baits

We are confident that this investment in R&D, which is gratefully acknowledged by all participants, will be recovered and repaid many times by decreased disease risk, lowered infrastructure damage and improved stock survival for many years to come. Moreover, those working at the coal face of feral pig management now have a more cost effective set of tools to improve the efficiency of feral pig management with the “set-and-forget” capability of the hoppers. This will enable much larger programs to be managed by available staffs that are already stretched to the limit servicing pest problems over vast areas.

We at ACTA see this as an example of a project that seemed almost trivial at first but which has blossomed to open up a major new opportunity to tackle one of Australia's worst pest threats.



A large hog was able to damage early prototype in US trials leading to design changes



Hoppers are available directly from ACTA.

Simply fax requirements to 03 9308 9622 or call Jamie (Qld/NT), Chris (NSW), Craig (Vic/SA) or Phil at our head office if you have any queries.

Contact numbers see page 2.

The IA-CRC office at Adelaide will also be able to give the benefit of their development and testing results

(Call Jason 08 8357 1222)

Invasive Animals



Acknowledgments.

The team appreciates contributions from the Federal Government through the Bureau of Rural Sciences Australian Pest Animal Management Program who supported product development. Cooperation was also received from several government and semi-government agencies throughout Australia and assisted by several private landholders and national park managers.



Delicia® SLUGGOFF® lentil bait controls snails & slugs of all types & in all conditions



Last year we announced the Australian launch of the latest technology from Europe for slug and snail control. Early adopters have been amazed at the effectiveness of the bait.

Our suppliers in Germany asked the obvious question of how big is a snail's mouth and how many pellets (bait stations) should we optimise for a kilogram of bait, while at the same time not having pellets so small that they blow away or disappear down cracks. The

result was the lentil shaped bait ("the new shape in slug and snail control) with double strength metaldehyde (3% w/w) that achieves excellent control of even the smallest snails types. Amazingly this is all achieved with less total chemical use than for all other products.



The high tech production process also uses the highest quality ingredients for optimum palatability and resistance to moisture.

This allows effective control in broad-acre situations at just a 3kg/ha application rate – well below the approved rates for all other products. This cuts spreading costs and is a special feature for aerial

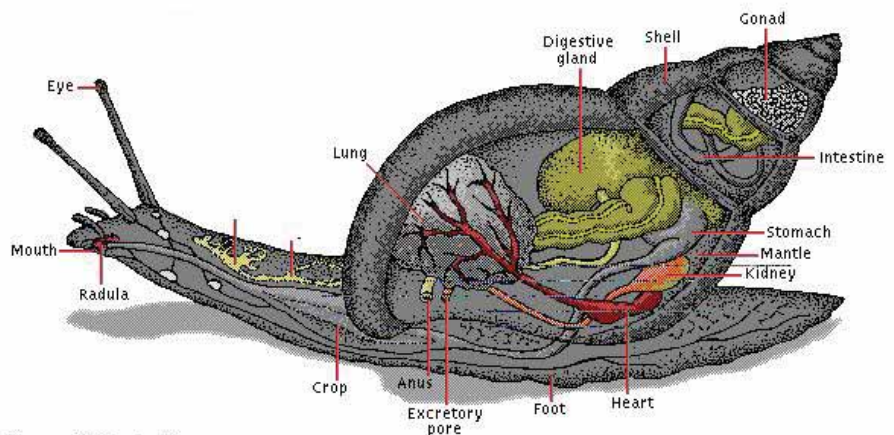
operators, who can treat more crops with fewer landings to reload.

Snails and slugs are an emerging problem for many Australian pastures and cereal crops and the problem has gradually spread and intensified over the last 50 or 60 years, since they were first detected. Their importance fell recently during the extended period of severe drought, which did not favour their breeding. This is about to change after the record rains of this summer.

Farmers need to be especially vigilant this autumn and winter as all species of slug and snail will rapidly breed in the wet conditions now prevailing in all key areas except WA. Now is no time to be complacent!

The introduced species include the **Small White Italian snail (*Theba pisana*)**, found in coastal areas of Vic, SA, NSW, Tas and emerging in WA, the **Vineyard or Common White Snail (*Ceruella virgata*)** found in Vic, Tas and SA and some parts of NSW and WA, the **Small conical or pointed snail (*Cochlicella barbara*)** that is a special problem in the York peninsular of SA but now also found in Vic and NSW, and the **Conical or Pointed Snail (*Cochlicella acuta*)** also a problem on the York peninsular of SA with emerging infestations elsewhere in several states. Snails are less of a problem in tropical areas but the **Oriental Snail (*Bradybaena similaris*)** is becoming a pest for ornamentals and citrus from Brisbane to Bega on the NSW coast.

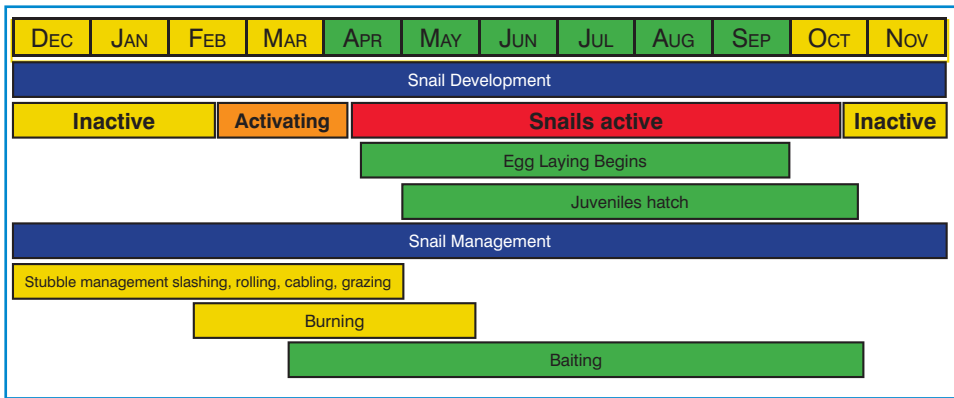
Slugs of several species (**Field slug (*Deroceras reticulatum*)**, **Black keeled slug (*Milax gagates*)** and the



Microsoft Illustration



ACTA has excellent support from Frunol Delicia in Germany



Contractor Impressed by Sluggoff

Ombersley, near Winchelsea in Western Victoria is in an area where slugs and snails are an enormous problem for many crops and pastures. Rural contractor David Lowrey of **Mirrabook Agriculture** has used a range of products in his efforts to control slugs and snails in his client's crops with varying success. He was keen to trial Delicia Sluggoff® Lentils after the product was launched by ACTA in a very wet autumn of 2010. David was thrilled with the results and told Craig Wood of ACTA, "I was initially attracted by the lower cost per hectare compared to other premium baits. When I trialed the product I saw that the rain fastness was excellent, the bait lasted for ages and the fast bait uptake meant slug and snail control was second to none, particularly with the very wet season we received in 2010. The fact that the active (ingredient) is mixed through the entire bait meant that as long as remnants of the bait remained on the ground it would still work. My clients and I soon realised that SLUGGOFF®'s longevity and superior pest control was a far more cost effective option than multiple applications of so-called 'cheap' bait."

David also remarked that, "SLUGGOFF® spreads beautifully through my Jensen spreader, and the low use rate means application costs are much lower than other products I have used. I'm impressed that SLUGGOFF® is completely dustless, which is important with the focus on OH&S nowadays. I'm also rapt that the 20kg bags have a handle and spout which makes Sluggoff easy to manage, and the fact the bags are weatherproof means I don't have to worry about carrying tarps to keep the bags dry on the ute!"

David's success means he is now happy to recommend SLUGGOFF® to anyone who has a slug or snail problem. SLUGGOFF® is registered for all species of slug and snail and is available from your local merchant. In closing, passionate Essendon Football Club fan David stated that if his beloved Bombers perform as well as SLUGGOFF® in 2011, he will be a very happy man!

Leopard slug (*Limax maximus*) hat can exceed 5cm in length, also do great damage to emerging and developed crops. Slugs live under the soil surface and can be difficult to detect (use an upturned moist flower pot base or tray to draw slugs to the surface).

The introduced snails are from temperate climates and have the capacity to seal themselves against desiccation in summer (a process called aestivation). They reactivate to breed and lay (as many as 400 eggs per snail) once conditions become moist in Autumn. Populations can rise rapidly and inflict serious crop damage throughout the growing period.

The shells also cause down grading of grain cops at harvest. The problem is widespread in Vic and SA but there are increasing reports in southern WA and NSW which may be the start of a long-term battle. Early intervention should be a focus for those areas "with just a few snails". The problem gets worse at a "snail's pace", so is easily ignored until too late.

Sound industry advice is to smash shells using rollers or bars, to burn and graze stubble (in snail areas) to cook snails and remove cover, and of course to bait them early in the season.

The new shape of slug & snail control



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



500kg and 1 tonne bulk bags also available

Help for Bandicoots

Contract pest controllers enlisted to help save Bandicoots in Victoria

Member of the Vertebrate Pest Managers Association of Victoria (VPMVA – see last newsletter), Leigh Swann, has been working with DSE for the last year and a half using FOXOFF® to control foxes from Cannons Creek to Lang Lang, Koo Wee Rup, Bayles down to Cardinia. This is a large area of mixed farmland and remnant habitat and is home to residual bandicoot populations. Over 500 confirmed fox takes have been recorded from marked stations using remote triggering cameras.

An interesting by product of the intensive monitoring was the detection of significant numbers of bandicoots in the

area, with over 100 photographs taken of these valuable native animals. Though monitoring of the bandicoot populations has not been part of the program, it is expected that the sustained fox baiting program will have significant benefits for the preservation of this species in the area.

The photos of bandicoots below were from the Bayles tip area and on two private properties around Tooradin.

We thank Leigh Swann for allowing us to print his photos.



For Simple and Effective Rabbit Control
RABBAIT®
Pindone Oat Bait



Trust the proven performer

Bring rabbits under control with RABBAIT® Pindone Oat Bait. RABBAIT® Pindone Oat Bait is made on premium shellbed oats for simple and effective rabbit control. Available in a variety of pack sizes to cater for all rabbit problems. For information call 03 9308 9688 or visit our website at www.actacontrol.com.au or visit your nearest rural merchant. acta Excellence in Pest Animal Management

They're back!

Many are concerned about the rapid resurgence in rabbit numbers in recent years and especially in response to the very favourable season with extended breeding opportunities this year. We have previously, with many experts expressed concern that neither myxoma virus of Rabbit calcivirus are doing the job as well as in their early years. As the legendary Professor Frank Fenner said, on the 50th Anniversary of his pioneering work on myxomatosis, "we are lucky in Australia to have had the benefit of the worlds only two target specific lethal virusus to control a significant pest, but we are most unlikely to have a third". Sadly this great scientist and teacher passed away recently but those who ignore his wisdom will pay a high price. Moreover, the existence of a benign calcivirus that confers protective immunity, combined with recovery and resistance in young rabbits and those protected by maternal antibodies has resulted in RCV being less effective than expected in wetter areas.

Thus we must resort to warren destruction, shooting and baiting to try to keep numbers as low as possible. The last time to try to control rabbits is when there is a plague!

To help with this ACTA has supported RABBAIT® distributors with counter displays and a competition to enter the draw for an ipad and supporting prizes. The wet season has provided ideal breeding conditions for rabbits but also delayed control programs usingf oat or carrot baits. A reminder that ACTA has a hightech carrot bait production facility to provide fresh pindone or 1080 baits in Victoria.



There are more foxes than most people think!



FOXOFF®
Fox Bait

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. While travelling on the Western Hwy in Victoria a few months back a line of foxes on the fence reminded me that it time to revisit this critical issue.

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 Km² in the eastern suburbs of Melbourne. Most consider that there are 2 to 10 foxes per Km² 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/Km².

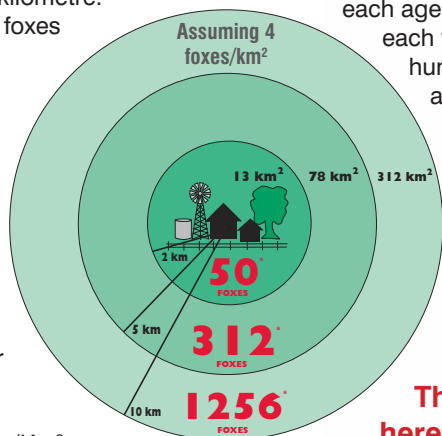
It is thus easy for lot's of lambs to go missing! Within 5 kilometres there are probably more than 300 foxes.

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. 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.



Better programs run over the entire properties are needed and neighbourly cooperation is just as important now as in years gone by.



MOUSEOFF®
Zinc Phosphide Bait

Mouse risks to crops greater than appreciated

Last year saw independent mouse infestations in several States. Cereal areas including the Eyre peninsula, the Vic Wimmera, Geraldton in WA were affected, with spot fires on the Darling Downs, Qld plus North Western NSW. Problems appeared in autumn, winter and spring. We have not seen such a sequence in our 13 years of mouse management activity.

By late 2010 we had a high starting population, abundant feed from a super harvest (except in WA) and wet summer conditions favouring native grass and weed seed supply. Breeding had been triggered early and we considered that 2011 could become the "mother of all mouse plagues". No sooner had we started to discuss this, when the heavens opened, giving standing water over half of Australia. Now it is more difficult to predict what mice come planting season 2011.

The most critical times for mouse damage in cereals are at sowing when as much as 5% of sown grain can be eaten each night, (see photo below) and at the tillering stage when one mouse can eat the tillering node out of a lot of plants to cause catastrophic crop failure. Damage closer to harvest can include attacks on the milky stage of cereals (dropping whole heads) or seed removal from the heads themselves, but while this may look bad and may decrease yields, it is probably less serious than the damage in earlier stages of crop development (except for corn and sunflower).

For crops such a lupins and canola there is extreme risk of pod loss if mice persist through the podding stage. In 1999 in NSW, a quite low density of mice, well below a 'plague', caused massive damage to over 300,000Ha of canola at this time. Any delay of the decision to bait can lead to disaster. The benefits of mouse baiting will exceed the cost of control once crop damage exceeds just 2%.



Tell tale signs of mouse activity easily seen on roadside. This is the EP in 2010.



Trials were conducted in the area shown by the red dots.

ACTA would like to acknowledge the local NRM boards staff and farmers who helped with site access, digging up nests and the intensive trapping involved. The results below are VERY preliminary but are important to understanding the best approach to mouse management.

Recent research findings:

In an effort to assist EP farmers we have had our rodent research team in the field around Streaky Bay and Loch for two months last Spring.

Our objectives were to provide answers to some farmer questions. The key questions will require more detailed studies (that will continue over the next year if industry supports us). The preliminary work requires additional analysis, but to give preliminary feedback as quickly as possible, we have summarised some important early findings below.

1) Farmers ask how many grains of MOUSEOFF® do mice eat?

We know that as little as one grain of MOUSEOFF® bait can kill a mouse but a hungry mouse might eat more than this before succumbing. Pen tests, under ethics approvals, offered mice up to 20 grains of poisoned wheat. The mice ate between 2 and 15 grains each before they died! In all cases the bait was chewed



RESOWN crop lost! Mouse control pre sowing would have returned a 16 times the investment (not counting the value of the developed crop!)

into small pieces, so some farmer reports of finding whole greains of bait in a mouse stomach probably over estimates the amount of grains eaten.

There is thus potential for mice to scavenge more "than their fair lethal share" of bait. This may be a problem in areas of extreme high density, as some mice will monopolise the available bait and some mice will potentially miss out on treatment. However it is well proven that in most normal situations the 1 kg/Ha is ample to achieve high level control. Only in localised extreme situations should re-application be needed.

2) Farmers asked if MOUSEOFF® can be mixed with fertilisers?

This approach would overcome all bait



Example mouse stomach opened to show several lumps of partly digested bait grain.

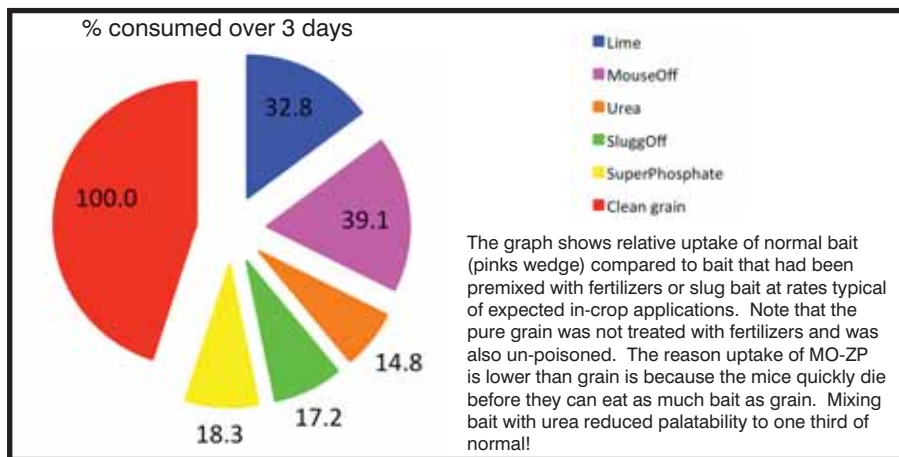
spreading costs to protect crops at around sowing. Anecdotal reports to ACTA have indicated that "this works", BUT we are not so sure. There are risks that urea or super will quickly react with and degrade the ZP or that lime will buffer the bait against the mouse stomach acids to delay death. Moreover, the bait grains contaminated with fertilisers (especially urea) may be less palatable to mice so reduce the bait effectiveness..

The data bodes for caution when trying mixtures (see pie chart).

3) Farmers asked how far mice can travel into treated areas?

This question is of vital importance to getting good crop protection, especially if areas around the crop contain high mouse densities.

The answer will depend on the amount of food present and the mouse density between areas. The more food available, the less distance mice will need to move; the higher the density the greater potential for mice to spread. The ACTA research team found some startling results in EP crops.



The graph shows relative uptake of normal bait (pink wedge) compared to bait that had been premixed with fertilizers or slug bait at rates typical of expected in-crop applications. Note that the pure grain was not treated with fertilizers and was also un-poisoned. The reason uptake of MO-ZP is lower than grain is because the mice quickly die before they can eat as much bait as grain. Mixing bait with urea reduced palatability to one third of normal!

One mouse that had been tagged and released (after live capture) was found two nights later at 630 metres from original point of capture. Another tagged mouse was recaptured 725 metres away after 10 days. Eleven mice were recovered over 300 metres away within one night! Many "new" mice were entering trapping grids after local mice had been tagged.

Thus, when feed is short and mouse numbers are high, re-infiltration of baited areas from the edges AND WELL INTO THE BAITED AREA is HIGHLY LIKELY and that our previous thoughts on 50 meter buffer zones do NOT hold when feed is short and density is high.

This is critical information and explains, in part, why some farmers may perceive a "bait failure" when it is simply re-infiltration from surrounding areas. We also found that many of the new mice were quickly killed by residual bait so it is not all bad news. However, the problem must be considered if a farmer is treating only a small area within a large area of high mouse density. Clearly mice are not moving across the landscape from property to property, but within paddocks the edge effect re-infiltration can be significant and rapid.

4) Farmers asked how many mice are in each active hole?

This is a difficult question to answer accurately. We have counted 0 to 24, others have counted up to 40! We allow a conservative mice per active hole when estimating populations by the hole count method.

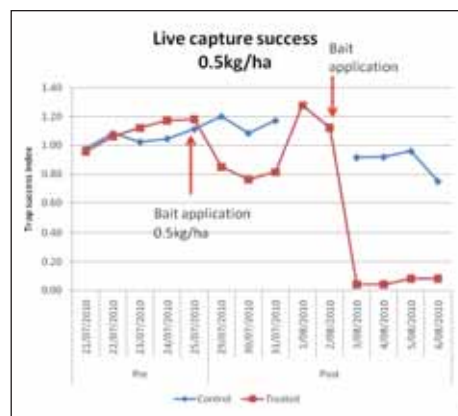


We use a conservative figure of just 2 mice per hole, since many holes have no mice present when excavated. The picture left shows 24 dead mice found in just one excavated hole in a baited paddock.

5) Farmers asked if low mouse densities are controlled with MO-ZP @ 0.5kg/ha

The label rate is 1kg/ha for MOUSEOFF® and this provides enough bait to kill up to 20,000 mice – in theory. This assumes that the bait and the mice are evenly spread, that one mouse only eats one grain and that one grain is always lethal and that the mice are evenly distributed over the landscape. Typically >98% knockdown is achieved within a day or two of application.

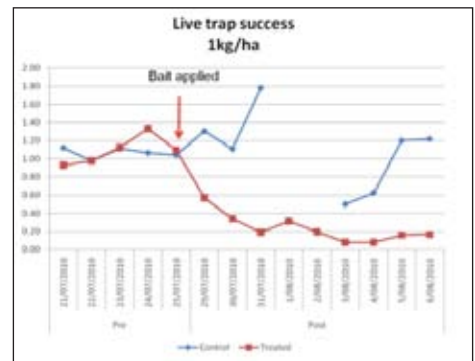
We took the opportunity in EP to test a lower rate of 0.5kg/ha and found that this was less reliable and quickly followed by re-infiltration (see diagram below). In the first graph a rate of 0.5kg/ha gave only 30% control but, when followed by 1kg/ha a week later, the control level was 100%. Pre-bait mouse densities in the treated area were 499 mice/ha.



MOUSEOFF® ZP achieved 89% control in six nights when applied at 1 kg/ha to a treatment mouse population at 516



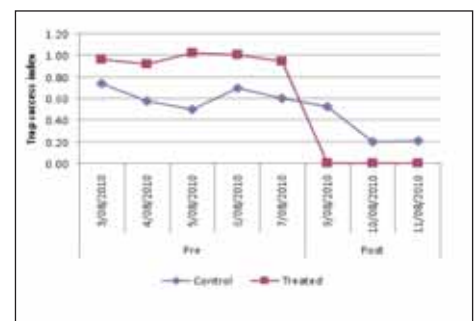
mice/ha (T), adjacent to 695 mice/ha in the control paddock. In this situation is suspected that the bait impact was affected by new mice entering the treated area, since none of the initial tagged residents survived.



In a separate trial a single bait application at 1kg/ha was 100% effective within a day. In another site, application of 1kg/ha was effective but it took a few days to reach minimum mouse numbers (infiltration slowing control?)

In a third trial MO-ZP and 1kg/ha gave 100% control of 241mice/ha in two nights.

This new data suggests some rethinking of mouse management. A preventative approach seems warranted while mouse numbers are relatively low and easy to manage with low bait application.



“Never, in the history of Australia, has so much been needed from so few (sheep)”

These corrupted words of Winston Churchill, referring to WWII Spitfire pilots, can now be applied to the female sheep of Australia, as we consider how to achieve flock improvement, produce wool and graze stubble while at the same time slaughtering more sheep than ever!

In a recent quantitative review of the Australian sheep industry, Prof Kimball Curtis (WA Agriculture) highlighted the crisis of numbers in the Australian sheep industry:

“The Australian sheep industry has undergone, and continues to undergo, significant restructuring. At the core of this restructure is a re-weighting of the value derived from the sheep and lamb meat industries relative to the value derived from wool. In addition, there has been a sustained decline in the size of the sheep population over the last 20 years.”

These changes in flock size and relative value from sheep meat and wool are dramatic. For the last 40 years sheep have been in general decline from a peak of 180 million in the early 1970’s to less than 80 million today. This 55% decline averages a loss of 4 million sheep or a 4% decrease in the national flock p.a.! One driver for this is that meat production is now valued at 50% of sheep total income, whereas it was once only 10% meat and 90% wool. Slaughtering is now the dominant money spinner.

The number of sheep farmers has also fallen from 55,500 to 26,500 in just 18 years! Farm consolidation, the effects of wild dogs and pigs and the increased value of crops and beef have all caused sheep farmers to desert the industry. The proportion of wethers has fallen while the proportion of ewes has increased, again reflecting the bias to lamb production. There is a trend to finer wool, so coarser wool breeds (which often have the highest fecundity) are declining in favour of merinos.

The current trends, according to ABS, MLA predictions and Dr Curtiss’s modelling predicts a COLLAPSE of the sheep industry over the next few years UNLESS

the lamb slaughtering and exports are reduced or unless the lamb turn off is substantially increased from the present overall marking percentages of around 82%. These are startling predictions but are based on sound analysis.

“Never before has the need for improved reproductive performance been greater.”

After spending much of his career working in sheep production, the wool industry funded Dr Staples’s post graduate education leading to the Regulin melatonin implant then subsequently FOXOFF® to improve lamb turn off.

The impetus for the FOXOFF® project was the ultrasounding of flocks (in our case Autumn lambing flocks) that showed *in utero* lambing averaging 111% (non



melatonin treated flocks), yet farmer follow-up of the same flocks seldom yielded marking percentages of more than 80%. Farmer estimates of lamb loss, excluding catastrophic weather-induced losses, was about 5%. Where were the other 26 missing lambs per 100 ewes joined going?

The answer was simple. We only had to listen to farmers to realise that the true effects of predation were, and still are, much greater than most academics of the time appreciated. When this was first raised some falsely judged that it was just a ploy to “push bait sales”. Far from it, Dr Staples realised that there was a massive economic return available to farmers if they achieved even a 10% increase in lambing marking rates. According to Dr Curtiss’s modelling this sort of change would now save the industry from an impending disaster.

So what are the economics of EFFECTIVE fox management at the farm level?

We use our mythical property called “Lambing Flats” to illustrate the simple economics.

Let’s assume that Lambing Flats is 500 hectares and runs merino sheep at four breeding ewes per hectare. Because they have good winter feed reserves they join in October and lamb in March. While this is not the optimum time for peak ovulation rates at joining, they traditionally wean 80 lambs per 100 ewes joined. They have devoted half the property to lamb production and run wethers for wool on the other half.

The 250 hectares devoted to breeding ewes has 1000 ewes producing 800 lambs. If fox control increased this weaning rate by a conservative 10% (ie: +10 lambs weaned/100 ewes joined, easily achieved if programs are well run) the result would be 100 extra lambs, conservatively valued at \$60 each at birth (and as much as \$180+ at sale). The value of the extra lambs is thus 100 x \$60 = \$6,000.

The cost of the FOXOFF® program, is much lower. If baits are purchased at \$1.10 each and one bait station is placed every 10 hectares, and baits were replaced an average of three times over a 3 week baiting program, the cost of baits is \$165.

The benefit:cost (B/C) calculation gives a 36 times return on investment in fox control. If one considers the opportunity cost of the lambs at \$120 per lamb the B/C rises to 72 times, and likewise the B/C is doubled again if the whole property is devoted to lambing.

There is no investment, other than gate latches, that gives such a clear return on investment and we believe that there is NO sheep farming property that should not be doing thorough fox control programs every year!

But it goes further than this. With increased reproductive performance from ewes it is possible to breed replacements and sale lambs from fewer ewes and so run more wethers. Wethers produce more

s so much



wool and wool with less risk of fibre weakness (break) that achieves higher prices. With the base wool price now also the highest for 15 years this adds to the economics. For those seeking finer wool or higher fecundity for lamb production the higher reproduction rate allows more culling for increased selection pressure to achieve flock improvement on any trait. For those with strongly seasonal feed supply the spring feed flush can also be more effectively utilised. So there are many benefits from even a 10% increase in weaning percentage and fox control is the cheapest way to achieve this.



“It goes without saying that anyone adopting high tech ways to improve autumn lambing performance (e.g. melatonin treatment) is wasting their money unless this investment is backed by effective fox control.”

M-44's available from ACTA in pilot program

Many readers will be familiar with the use of a device developed by the USDA to deliver toxins or biomarkers to foxes or dogs (in their case coyotes) in a targeted way.

The device has been developed over several decades of testing and modification. It rests on the principle that a fox or wild dog pulls upward on a baited head which then releases a spring loaded dose of poison directly into the animal's mouth. It has been used for cyanide delivery, but is now envisioned for 1080 and possibly also for PAPP.

While initially more expensive when compared to baiting, the devices can be reused multiple times for years and have applications in areas where more frequent visits to check baits is not possible or cost effective. Ejectors can be left set for long periods in the field complimenting or even extending existing baiting programs. They are highly suited to contractors. NSW Parks and Wildlife Service have an APVMA permit to use the units and have requested ACTA to make these available and service any spare part requirements. There is also a request to have the M-44's registered nationally for 1080 and we will locally prepare the required loading capsules and seek formal registration of these as soon as possible. The 1080 units will be available to NSW PWS in March and to others if the permit is extended or if full registration granted. M-44's, lure heads and 1080 loaded capsules can be ordered direct from ACTA (Fax 03 9308 9622) but can only be supplied to authorised or accredited 1080 users.



Fox with blue tongue indicating ejector triggering



Rob Hunt setting injector



Training program

The 2011 ACTA Award



At the last five Australasian Vertebrate Pest Conferences, Animal Control Technologies Australia (ACTA) has honoured field operators for Practical Pest Management Excellence. The winner receives sponsorship to attend the AVP Conference and is acknowledged for outstanding achievements at the grass roots level of pest management, with a certificate presented at the conference dinner. It also provides an excellent opportunity for field practitioners to learn about the latest research and at the same time, demonstrate to researchers the operational problems of dealing with vertebrate pest problems in the field.

Each State and Territory is asked to nominate entrants for the award with each regional winner becoming a finalist in the national competition. The overall winner will receive \$1,500 cash towards travel and accommodation and free registration including dinner at the Conference. The winner is also provided with time to present a paper at the Conference. People or teams who have applied before and have been short listed can re-nominate.

All State and Territory finalists for the award will receive a certificate sent via their relevant Minister so they also get some recognition for their achievements. The ACTA award is focused towards the "hands on" workers in the field.

Nominees must submit a one page description of their work, their own contact details and contact details for a referee to Prof Linton Staples, Animal Control Technologies, PO Box 379, Somerton Vic 3062 or email to lstaples@animalcontrol.com.au.

The winner is selected from State/Territory finalists by a panel of the VPC Chairman, Conference Chairman and ACTA MD and will have to submit an abstract for the conference proceedings as soon as possible.

Due date for applications is March 30th 2011.

More information: Prof Linton Staples, email: lstaples@animalcontrol.com.au or phone: (03) 9308-9688.

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