

UC Agriculture & Natural Resources

Proceedings of the Vertebrate Pest Conference

Title

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Permalink

<https://escholarship.org/uc/item/458376gs>

Journal

Proceedings of the Vertebrate Pest Conference, 25(25)

ISSN

0507-6773

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Publication Date

2012

DOI

10.5070/V425110550

PestSmart: An Information Toolkit for Practical Pest Animal Control

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ABSTRACT: The Invasive Animals Cooperative Research Centre (IACRC) has developed an end-user centred information toolkit based on developing and implementing best-practice regional and local management strategies for pest animals. The PestSmart Toolkit has consolidated the latest knowledge on strategic planning and management of major Australian agricultural and environmental pest animal species, combined with product use manuals, case-studies, fact-sheets, guidelines and extension materials including videos and social networking. Much of this has been derived from the IACRC's 7-year (2005-2012) research and development program, but the Toolkit also adopts prior best practise techniques and knowledge where appropriate. All PestSmart Toolkit products and publications are freely available online at www.feral.org.au/pestsmart/. A great deal of information is already live and more is on the way. Users can browse the information based on pest species of interest, type of information required (e.g., policy and legislation, management, maps, images), or information relevant to different groups of people (land managers, regional/natural resource managers, policy makers). The PestSmart Toolkit formed the basis of a nationwide PestSmart Roadshow, conducted in all state and mainland territories of Australia between January and June 2012. Roadshow events have directly demonstrated the PestSmart Toolkit, along with the use and benefits of the new and soon to be registered pest animal control products and techniques available to land managers. The overall process, which combined the establishment of the PestSmart website, 60+ factsheets and case studies, Facebook and Twitter accounts, YouTube channel, 20-stop national PestSmart Roadshow day-long events, and promotional material, has been incredibly well received and has significantly changed the face of pest animal management in Australia. This has been indicated by participant feedback, website usage, and new product sales. The PestSmart approach is recommended for other states or countries interested in reinvigorating the overall public morale and participation in pest animal control.

KEY WORDS: Australia, community participation, extension, marketing roadshow, pest animal management, product promotion, public education

Proc. 25th Vertebr. Pest Conf. (R. M. Timm, Ed.)
Published at Univ. of Calif., Davis. 2012. Pp. 291-295.

INTRODUCTION

The Invasive Animals Cooperative Research Centre (IACRC) was funded in 2005 to deliver a suite of enhanced pest animal control products for wild dogs, feral pigs, foxes, rabbits, European carp, and feral cats amongst other objectives. Included within the portfolio of products were improved toxins, baits, target-specific delivery systems, and management strategies that would provide a significant improvement in the way pest animals were managed in Australia. Each product has been developed with useability, animal welfare, target specificity, and cost-effectiveness in mind. Every innovation promised by the IACRC will be delivered along with a few extras, a rare feat for any research organisation, although most (besides PIGOUT[®] and the HOGHOPPER[™], which have already been launched) will not be registered until 2013-2014. To ensure effective product uptake, and return on investment for government and industry funders, the IACRC conducted a nationwide roadshow to directly demonstrate the use and benefits of these new products, as well as to assimilate the most pertinent information on pest species, existing control tools, and new options

into a readily available web-based information repository known as the PestSmart Toolkit.

The PestSmart Toolkit and subsequent national IACRC PestSmart Roadshow was sponsored by the Australian Bureau of Agricultural Resource Economics and Sciences (ABARES), Australian Wool Innovation Ltd (AWI), Meat and Livestock Australia Ltd (MLA), and the Australian Government Murray Darling Basin Authority (MDBA). The project offered the opportunity to promote the good work that had been done over the preceding 7 years and to ensure the effective uptake of the new suite of IACRC products and information, including:

- For wild dogs (*Canis lupus*) and introduced red foxes (*Vulpes vulpes*): para-aminopropiophenone (PAPP) baits, Blue-Healer[™] antidote, M-44 mechanical ejectors, Lethal Trap Devices, and Nil-tenure approach
- For feral pigs (*Sus scrofa*): PIGOUT[®], PIGOUT[®] Econobait, HOGGONE[®], HOGHOPPER[™], a sodium nitrite concentrate for addition to grain bait, and the 'genetic fences'

molecular ecology approach

- For introduced European rabbits (*Oryctolagus cuniculus*): carbon monoxide high-pressure fumigator, and freeze-dried Rabbit Haemorrhagic Disease for addition to chopped carrots
- For foxes and feral cats (*Felis catus*): morphology-recognising spray post technology.

Effective extension and uptake of the IACRC's new products and information could have the double benefit to funders, such as MLA, of reducing the AUD\$200M+ per annum (p.a.) impact of pest animals on red meat production in Australia (Gong et al. 2009), along with increasing royalty returns to the organisation of products developed and promoted with their financial assistance.

METHODOLOGY

The overarching objectives of this project were:

1. To ensure that existing and IACRC-developed information on key pest species, including their biology, distribution, impacts and the most effective management options, is readily available in the form of a PestSmart Toolkit on www.feral.org.au.

2. To enhance the uptake of the above mentioned suite of new IACRC-developed pest animal management products and information through a national IACRC PestSmart Roadshow to directly demonstrate the use and benefits of the new products to graziers and other land managers alike.

The overall project involved two separate but intricately related extension approaches:

- 1) The **PestSmart Toolkit**, which is an ever-evolving web-based (<http://www.feral.org.au/pestsmart/>) repository of specifically prepared fact sheets, case-studies, technical manuals, scientific reports, and YouTube clips on the IACRC's key pest species- rabbits, wild dogs, foxes, feral pigs, feral cats, carp (*Cyprinus carpio*), and tilapia (*Tilapia mariae* and *Oreochromis mossambicu*).

- 2) The **PestSmart Roadshow**, which was a direct end-user engagement approach involving 20 regional day-long workshops, 2 pest fish forums, and the attendance at 10 partner events, including agricultural and natural resource management conferences and field days.

PestSmart Toolkit

The PestSmart Toolkit consists of packages of information that distil existing pest animal information and the IACRC's 7-year research program findings into practical planning and control actions that will improve pest animal control, and reduce pest animal impacts both at the property and regional levels.

Initially, Robins (2010) was commissioned and found, through surveys and focus groups, that regional pest managers including graziers and other land managers are most likely to adopt toolkits on products and strategies if they are developed and promoted as a one-stop-shop for up-to-date and reliable information on pest animals across a wide range of topics and product types. As a consequence, the development of species-based, as well as integrated pest management toolkits, was a major focus

of the last few years for the IACRC and is one of its key information legacy products.

Each section of the toolkit, including wild dogs, foxes, feral pigs, European rabbits, feral cats, European carp, tilapia, and integrated pest management, is/was being prepared or overseen by the leading IACRC researcher in the field. The aim was to have the initial, albeit still comprehensive, species PestSmart Toolkit go live prior to embarking on the IACRC PestSmart Roadshow to ensure attendees, along with neighbours and colleagues, have somewhere to go to gain further information following attendance at, or hearing about, a roadshow event.

Attendees were also given a copy of the IACRC PestSmart DVD, which details practical information on how to most effectively use existing pest animal control techniques, as well as the IACRC's suite of new products. All videos contained on the DVD are now on YouTube at <http://www.youtube.com/PestSmart>.

PestSmart Roadshow

Robins (2010) also reported the "central importance of face-to-face and interactive approaches to information exchange in some regional contexts is strongly emphasised." This led to the concept of the PestSmart Roadshow, which was modeled on similar events previously conducted by MLA and AWI that have involved IACRC staff.

The PestSmart Roadshow was organised by the 15-member IACRC-convened and funded Adoption Steering Group (ASG). The ASG contains core IACRC staff, funder representatives/extension experts and independent pest animal extension experts. The ASG met five times in 2011, in January (MLA, Sydney), March (IACRC, Adelaide), June (AWI, Sydney), September (MDBA, Canberra), and December (Animal Control Technologies Australia, Melbourne), ahead of the January 30, 2012, launch. The ASC was chaired by the lead author.

It was planned to conduct at least 3 large farmer/land manager public PestSmart Roadshow events in each of the states of Queensland, New South Wales, Victoria, South Australia, and Western Australia. Additional events were to be held in Tasmania and the Northern Territory if the budget allowed, as both of these states were to be addressed through attendance at significant existing external events.

Roadshow events were to involve a day-long workshop that would initially take a species approach to key pest animals (region dependent), discuss recent developments, and demonstrate techniques before highlighting the importance of integrated pest management. Attendees would also be shown how to navigate the PestSmart Toolkit website, and learn where and how to access control products. Onsite and follow-up surveys were conducted at each PestSmart Roadshow event to assess knowledge and capacity improvement that has originated from the roadshow and toolkits.

Some events alternatively consisted of IACRC representatives attending and presenting at key agricultural and land management conferences and field days within Australia that occurred in late 2011 and early 2012.

RESULTS

All overarching and specific objectives of the project

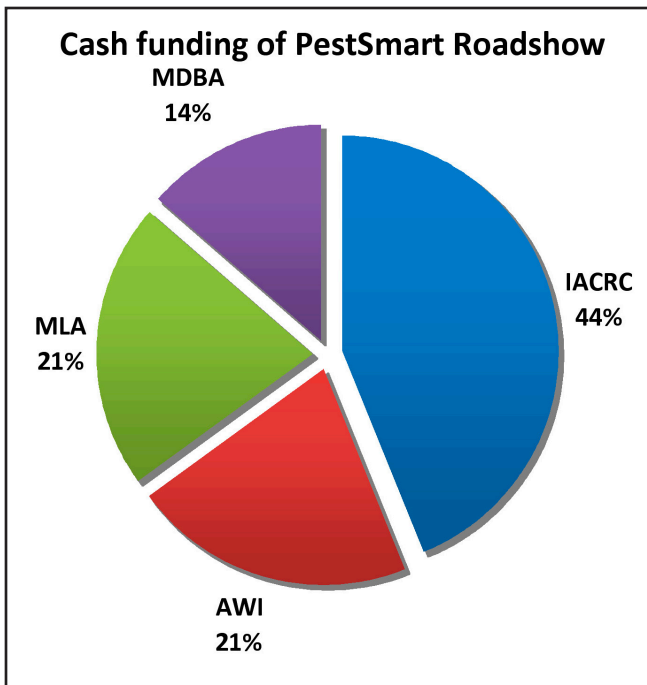


Figure 1. Proportion of cash contributions to the Invasive Animals Cooperative Research Centre PestSmart Roadshow.

were met on time and slightly under budget. This led to the organisation of three extra requested PestSmart Roadshow events in June 2012.

PestSmart Toolkit

To date, there have been more than 60 PestSmart Toolkit factsheets, case-studies, glovebox guides, technical manuals, and scientific reports produced, all of which are available from the PestSmart website listed above. All of the factsheets, case-studies, and glovebox guides that were completed prior to or during the PestSmart Roadshow events were printed and given out to attendees at the events in the form of a ‘goodie bag’, if they completed their evaluation sheet. All factsheets, case-studies, and glovebox guides that involved research sponsored by industry or government funders have been co-branded as such. An additional 50 PestSmart Toolkit products are currently in production and should be available by the end of 2012 or early 2013.

The PestSmart YouTube channel now contains 64 original videos shot by the IACRC that demonstrate practical pest management, pest ecology, and pest impacts, including interviews with farmers and species experts. Over 30,000 videos had been viewed at the PestSmart YouTube Channel within its first 6 months.

Funding

Throughout 2010-2011, the IACRC was successful in applying for and receiving funding from AWI, MLA, and MDBA to leverage the IACRC’s significant internal contribution. The total budget for the PestSmart Roadshow, including ASG organisation expenses and attendance at partner events, was AUD\$512,000. The proportion of contributions is depicted in Figure 1.

Additionally, ABARES invested \$80,000 into the preparation of the PestSmart Toolkit, contributing to the \$300,000 cash (for science writers; AUD\$60,000 per key species) and in-kind contributed by the IACRC. An additional AUD\$225,000 cash was expended producing the PestSmart DVD’s– canid trapping and general pest management. The overall investment in the PestSmart project has amounted to AUD\$1.12M, not including significant in-kind staff salaries, approximately 2% of the organisation’s AUD\$59M cash operating budget between 2005 and 2012.

PestSmart Roadshow

The PestSmart Roadshow was officially launched at Queanbeyan, New South Wales, on January 30, 2012, to a crowd of near 100 people. The final locations for all Roadshow events are depicted below (Figure 2), with the two pest fish forum locations in italics (Brisbane for tilapia, and Melbourne for carp). Standard PestSmart Roadshow events and fish forums were conducted between February and June 2012. Each state was generally covered in one week, not including the fish forums. Timing for specific events was aimed to avoid local harvesting and shearing times, livestock sales, and nearby competing events.

In total 1,443 people registered for PestSmart Roadshow events via the PestSmart Toolkit website. Although some registered attendees did not attend the event on the day, such losses were generally outnumbered by unregistered ‘walk-ins’ for each event.

Initially there were no specific Roadshow events organised for Tasmania and the Northern Territory (NT), as the attendance at existing agricultural and natural resource management events was deemed sufficient exposure. A potential underspent towards the end of the PestSmart Roadshow allowed the IACRC, with approval from AWI and MLA, to organise events in the NT (Alice Springs and Katherine) and Tasmania (Campbell Town), therefore circumventing potential claims of geographical bias in where Roadshows were delivered. To examine

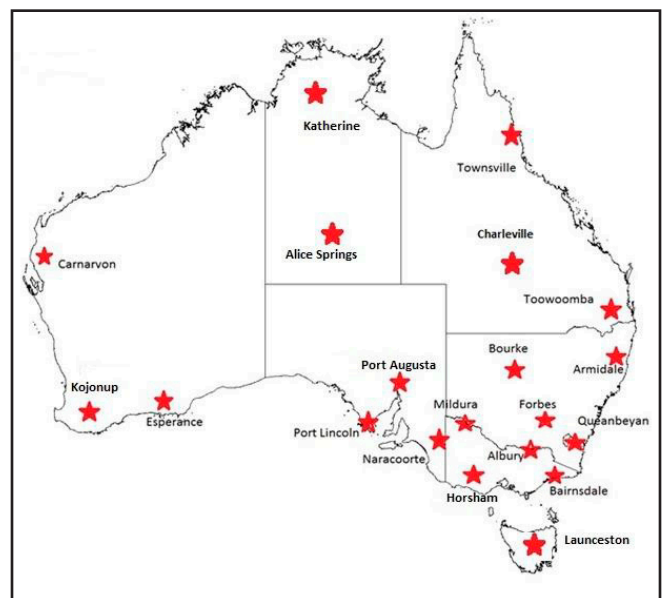


Figure 2. Locations of the Invasive Animals Cooperative Research Centre PestSmart Roadshow events

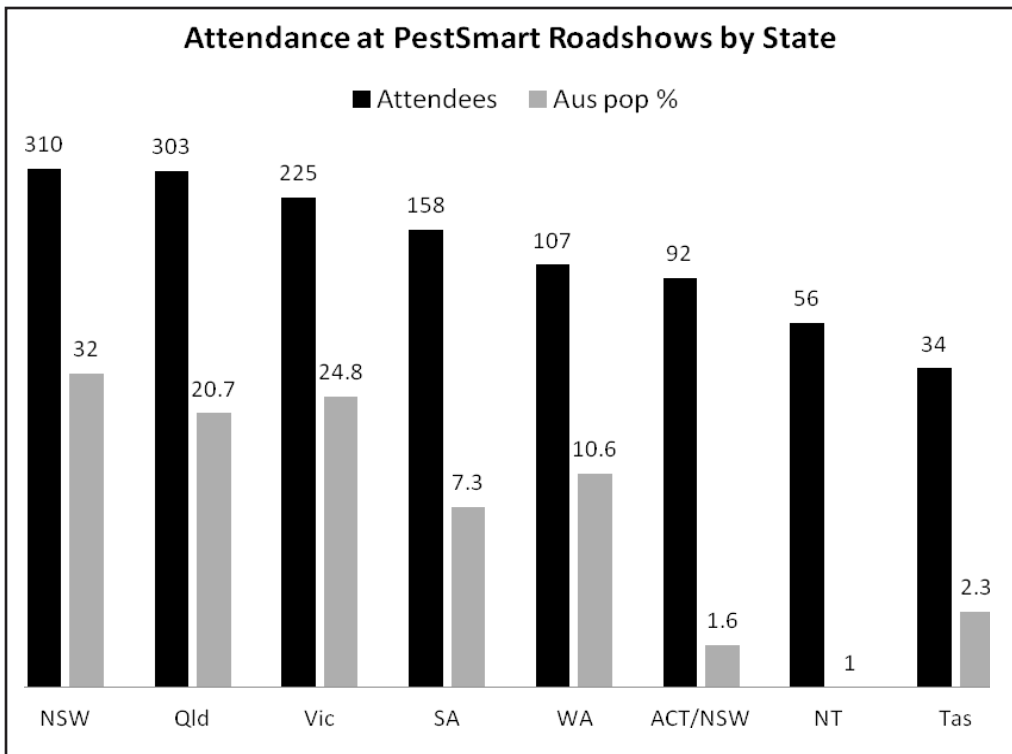


Figure 3. Attendance at the Invasive Animals Cooperative Research Centre PestSmart Roadshow events compared to Australian state population percentages.

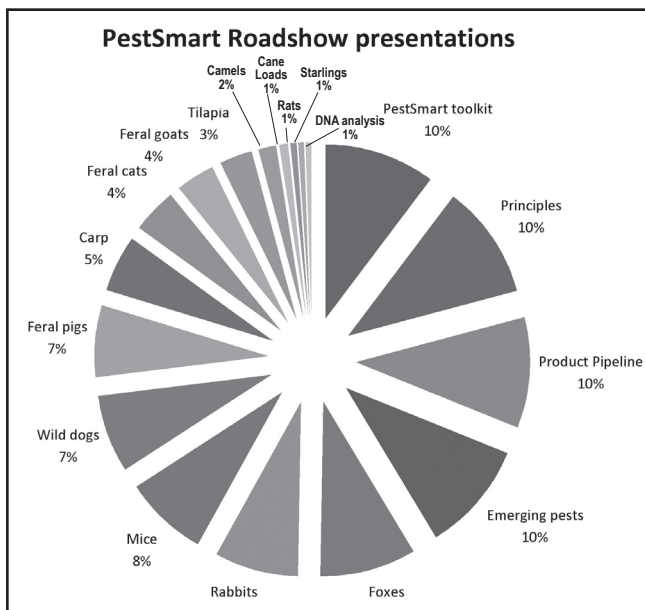


Figure 4. Overall presentation content at the 20 Invasive Animals Cooperative Research Centre PestSmart

whether attendance at Roadshow events was equitably spread across the states, the total number of state attendees has been graphed against the percentage of the Australian population occurring in that state on a logarithmic scale in Figure 3. As indicated below, attendance at the 20 regional Roadshow events was generally in-line with the Australian population demographics.

Yet to be analysed are the demographics of the audience members at each of the events, as the IACRC is still in

the process of entering the 1,000+ evaluations returned by attendees. Such an analysis will occur shortly. Notwithstanding, each Roadshow event was attended by a mix of government and private land protection officers, farmers and graziers, government officials, rural merchants, students, and concerned citizens.

PestSmart Roadshow Content

Figure 4 represents the topics presented at the 20 Roadshow events, which involved 193 individual presentations, not including the specific tilapia and European carp forums. Presented at each show were the talks on the PestSmart Toolkit, principles of pest management, the IACRC's product pipeline, and new and emerging pest animals.

Of the specific species, the talk on foxes was presented most, with the other major IACRC-focussed species of wild dogs, rabbits, feral pigs, and rodents being similar. This broadly represents the distribution and agricultural and environmental impact of these key pest species in Australia (West et al. 2008, Gong et al. 2009)

Although presentations on carp and tilapia represented only 8% of roadshow talks, they each had a specific forum dedicated to them, indicating the significant investment the IACRC, through MDBA support, has spent on these two species.

As per the audience demographics, the audience feedback to the specific presentations and presenters is currently being compiled and will be analysed once available. The complete PestSmart Roadshow evaluation will form the basis of a science extension journal article. Notwithstanding, comments direct to IACRC Board members from graziers they had asked to attend included "the day restored my faith in science" (from Forbes event). Other regular comments have included "a fantastically run event" (Bourke), "the best of this kind of event that I have been to" (Campbell Town), and "why don't all CRC's do this?" (numerous occasions). Undoubtedly, the most telling quote was delivered by a principal sponsor, Dr Johann Schröder from Meat and Livestock Australia, who stated "The PestSmart Roadshow set a new standard in the area of adoption of research results, targeting as it did, not primarily the end users, but the consultants, advisors and extension officers who would carry the message further."

DISCUSSION

From all reports, the IACRC's PestSmart Toolkit and

Roadshow have been a resounding success. Feedback has been overwhelmingly positive and every event had an extremely positive and collegial feel to it. The facts that some individuals travelled to multiple shows (up to 5 for one individual), people drove or flew more than 1,200 km each way to attend events, and that multiple NRM Boards have offered to pay AUD\$20,000 for the Roadshow to come to their town indicates the strong public support the extension effort had. Additionally, increases in sales of existing IACRC products, such as 125% for PIGOUT® above 2010 and 2011 sales, indicates that people are clearly acting upon the advice they received at Roadshow events from their advisors, or through the many associated media stories. Although the overall PestSmart project will cost c. AUD\$1M, if this results in only a slight change in behaviour and a 1% reduction in the AUD\$750M p.a. pest animal impact to Australian agriculture (Gong et al. 2009), then it has been financially worthwhile.

The major self-criticism of the PestSmart Roadshow is the low attendance at some events, and that the proportion of farmers and graziers attending the event was generally only 10-20%, depending on location. With advertising undertaken directly by MLA (in *Feedback* member magazine) and AWI (in *Beyond the Bale* member magazine), local newspaper advertisements taken out for each event, articles in most of the rural press newspapers, a 3-month campaign on *Imparja* rural television, and television and radio interviews prior to, during and following most events, this was not through a lack of trying. A potential improvement on this shortcoming would be to employ a professional media company to generate higher levels of interest for any future PestSmart events. Unfortunately, this was beyond the financial resources available this time, but it should be considered in planning future events.

The IACRC PestSmart Toolkit and Roadshow have been the greatest national extension effort ever undertaken in the invasive species field in Australia, and potentially one of the largest combined efforts in the pest animal

field in the world. The 2-year process has involved most IACRC staff and partner organisations, at some point. The whole process and remaining legacy – the PestSmart Toolkit – would have been a fitting end to the IACRC, as it was organised to be. Thankfully, the organisation has been extended until 2017.

ACKNOWLEDGEMENTS

The PestSmart Toolkit and Roadshow would have not have been possible without the financial and moral support of Meat & Livestock Australia, Australian Wool Innovation, the Murray Darling Basin Authority, and the Australian Bureau of Agricultural and Resource Economics and Sciences. For this we are sincerely grateful. The authors would also like to thank the members of the Adoption Steering Group and the Roadshow speakers for generously providing their time and expertise. Finally, we sincerely thank Australian Public Address, the professional audio-visual road crew used throughout the PestSmart Roadshow events, for their excellent service.

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