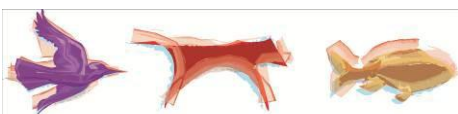


# Final Report

## Commercialisation of the Boar Buffet<sup>®</sup>/HogHopper<sup>™</sup>: A feral pig specific bait hopper.



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Invasive Animals Cooperative Research Centre



Australian Government

Australian Bureau of Agricultural and  
Resource Economics – Bureau of Rural Sciences

## 1. Name of project:

Commercialisation of the Boar Buffet®: A feral pig specific bait hopper.

*Note- the Boar Buffet® name was changed to HogHopper™ after the unit was significantly redesigned.*

## 2. Project objectives:

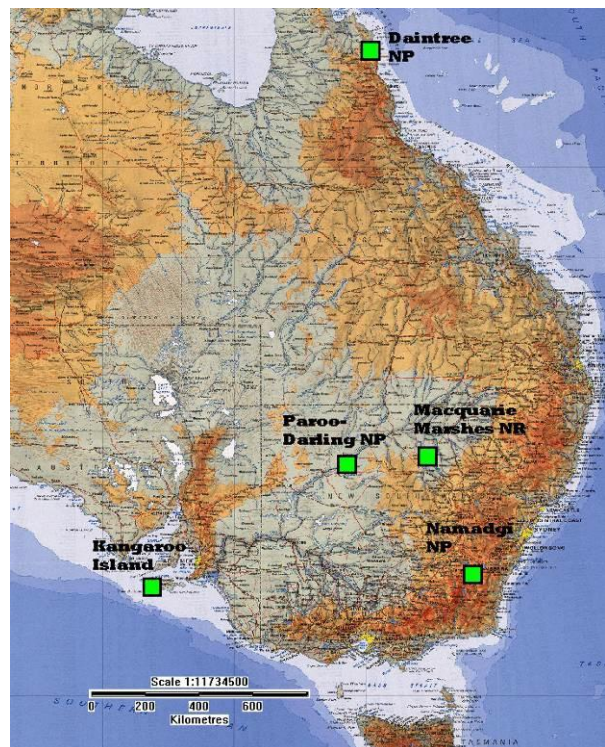
The project had four main objectives:

1. Assess utilisation and target specificity of the Boar Buffet®/HogHopper™ under field conditions with non-toxic PIGOUT® baits.
2. Determine the local feral pig population reduction achieved with the device using toxic PIGOUT® baits.
3. Ascertain a commercial manufacturer of the device through a national tender process and solidify retail arrangements for the HogHopper™, which will be sold through Animal Control Technologies Australia P/L for the deployment of PIGOUT® or HOG-GONE® baits (HogHopper™ can also be used to deliver grain and pellets).
4. Conduct product launch and national advertising campaign through the rural media.

## 3. Project location:

### Utilisation and target specificity under field conditions.

The Invasive Animals Cooperative Research Centre (IA CRC) undertook **non-toxic** Boar Buffet® then HogHopper™ field trials in several different Australian habitats to ensure that feral pigs could learn how to use the device in the wild. The trials also provided an opportunity to identify which non-target species could access bait prior to embarking on the final field efficacy trial. The locations used included the Paroo-Darling National Park and Macquarie Marshes Nature Reserve (NSW), Kangaroo Island (SA), Daintree National Park (QLD) and Namadgi National Park (ACT), all of which are depicted in Fig. 1. During the Daintree NP trial a dingo accessed the Boar Buffet® (push door), hence the HogHopper™ (lift door) was designed.



**Figure 1** – Location of trial sites used during the non-toxic field trials.

Localised feral pig population reduction.

The final field efficacy trial was implemented to ensure that the HogHopper™ could be used to significantly reduce localised feral pig populations before it was made commercially available as an additional feral pig management tool. The trial was undertaken on “The Mole”, a cattle and cropping property in western NSW, and the HogHopper’s were used to deliver 1080 laced grain and toxic PIGOUT®, two of Australia’s most common feral pig bait substrates (Fig. 2). The trial achieved a 90% and 100% localised feral pig population reduction respectively.



**Figure 2** – location of the trial site used during the final field efficacy trial.

National tender process.

During July/August 2010, the IA CRC called for Expressions of Interest (EoI) for the commercial manufacture of the HogHopper™. The article was advertised in *The Weekend Australian*, *The Land* and *The Weekly Times*. EoI’s were sought from aluminium manufacturers located in close proximity to major markets in NSW and Queensland (areas near abundant feral pig population), the retailer (Melbourne) and/or preferred areas of operation.

Product launch and advertising.

The initial product launch for the HogHopper™ was undertaken at the 2010 Australasian Wildlife Management Society (AWMS) conference in Torquay, Victoria, on December 1, 2010. The AWMS conference was chosen as the platform to launch the HogHopper™ because it promotes the use of science for developing wildlife management strategies and it attracts national and international leaders in the field. Animal Control Technologies Australia (ACTA), the commercial retailer of the product, will conduct a second launch for the HogHopper™ at the 15<sup>th</sup> Australasian Vertebrate Pest Conference in Sydney, NSW, on June 21<sup>st</sup>, 2011, to ensure that the HogHopper™ has maximum exposure.

Information on the HogHopper™ has been disclosed (no commercially sensitive data) in several IACRC produced documents, and at the Wildlife Damage Management Conference, Saratoga Springs, New York (May 2009) and the International Wild Pig Conference, Pensacola, Florida (April 2010). A media release was prepared and distributed to metropolitan and regional media outlets Australia-wide on November 24<sup>th</sup>, 2010, prior to the initial HogHopper™ launch, which attracted a great deal of attention. A similar article will be prepared and circulated prior to the second launch. A HogHopper™ field user manual has been created to ensure best practice use of the product and the results from all pen and field trials will be prepared and submitted to the Australian journal *Wildlife Research* or similar for publication.

Early market research was also conducted by the IACRC to ascertain which government authorities (NRM boards, LHPA’s and National parks) Australia-wide would find the HogHopper™ useful and to gauge potential first year sales within these organisations.

#### **4. Methodology:**

##### Utilisation and target specificity trials under field conditions.

Initially, feral pig hotspots were selected according to historical records. The hotspots were then assessed for recent feral pig activity (tracks, scats and rooting) and if fresh activity was found, the site was prepared for the trial. During this time, HogHopper™s were assembled on a flat section of earth between two trees spaced ~10 metres apart and a Reconyx PC85 infrared camera was fastened to each tree, one facing either end of the device (two cameras per HogHopper™). The HogHopper™s were loaded with a pail of free-feed PIGOUT® (64 baits) and were left in the field for one month under motion sensing camera surveillance. A control site was also created whereby free-feed PIGOUT® bait was placed directly on the ground to determine which species may interact with the bait if it was not delivered in a HogHopper™. Memory cards from the cameras were analysed at the end of the trial and the number of sightings (animals within 3 metres of the device not necessarily showing interest), visits (animals within 1 metre of the device showing genuine interest) and feeding visits (animals had consumed at least some bait) were recorded for each species. To prevent inflated visitation estimates we did not count individuals that made multiple visits within a 30 minute period. Such events were considered as one visit.

##### Localised feral pig population reduction.

All HogHopper™ hotspots were selected and prepared using identical methodology to the non-toxic utilisation and target specificity field trials, as discussed above.

Thereafter, the HogHopper™s were loaded with 30kg of dry barley (non-toxic) and the doors were fixed open to allow the pigs to feed freely from the device. The HogHopper™s were checked every four days to determine the level of bait uptake. If barley had been consumed it was replaced and free-feed PIGOUT® was deployed to ensure that the feral pigs were familiar with both bait substrates. When the animals were feeding readily, the HogHopper™s were prepared for stage 2 of free-feeding, whereby the bottom door stoppers were attached and the doors were lowered. This provides a ~15cm opening at the bottom of the door to allow pigs to place their snout partway into the device, although they cannot access bait unless they lift the door. The doors were closed fully when the feeding population reached a plateau. Non-toxic bait was deployed for an additional three days (stage 3 free-feeding) to ensure the animals could access bait when the doors were closed. Thereafter, toxic bait was deployed until bait uptake ceased. During this time, toxic PIGOUT® (72mg 1080 per 250g bait) and 1080 laced barley (400mg/kg<sup>-1</sup>) was deployed.

##### National tender process.

A call for Expressions of Interest (Eoi) for the commercial manufacture of the HogHopper™ was advertised in *The Weekend Australian*, *The Land* and *The Weekly Times* during July/August 2010 (Appendix 1). Interested parties were required to refer to the background document posted on the IA CRC website for additional information and procedural requirements (Appendix 2).

Expressions of Interest were evaluated according to the following selection criteria:

- Quality and estimated unit price.
- Location relative to the major markets in NSW and Queensland, the retailer (Melbourne) and/or preferred areas of operation.
- Capacity to scale up.
- Demonstrated past competency in manufacture from CAD specifications.
- Available resources (labour, plant, equipment).

- Plant and equipment (technical capability).
- Financial stability and viability.
- Industrial relations management.

During the Eol evaluation process, each company received a score (0 - 3) according to their ability to meet each of the above selection criteria. Those with a total score  $\geq 20$  points were invited to submit a tender that included a sliding scale for unit prices for 100, 500 and 1000 units. To protect the IA CRC's IP, shortlisted candidates were sent a mutual confidentiality agreement to sign and return. Thereafter, each company received the HogHopper™ CAD drawings to assist them with preparing their quote. Only those tenders received that could produce the HogHopper™ at a competitive price were invited to prepare a prototype for evaluation. Each prototype received was evaluated by the IA CRC according to a standardised format, and the company that produced the best value for money product was awarded the contract. A discussion paper was then drafted and sent to ACTA (IA CRC commercial retailer) so that they could verify the decision.

#### Product launch and national advertising.

A media release was prepared prior to the AWMS HogHopper™ launch. The article contained a brief history on the HogHopper™, its key values, the date, time and venue for the launch, as well as contact details for anyone wishing to purchase the device. The media release was advertised in Feral Flyer (1,200 subscribers) and in numerous metropolitan and regional media outlets Australia-wide.

Some HogHopper™ information (no commercially sensitive data) has been disclosed in several IA CRC produced documents and at several national and international conferences. Each presentation and background document generally encompassed a brief history of the HogHopper™ i.e. why it has been developed and the steps that have taken the device from being an idea to a commercial product, and summarised results from each field trial.

An email and an accompanying background document was distributed to all NRM regions within Australia that may contain feral pig populations (a total of 200 recipients to agencies including NRM boards, LHPA's and National parks). The objective was to ascertain which agencies may find a HogHopper™ useful and to gather an estimate on potential sales. The email requested information such as whether a device of this nature might be useful in their region and how many devices were they likely to purchase if HogHopper™s became commercially available. The background document provided all the information that was required to assist them in making the decision.

## **5. Results:**

### Utilisation and target specificity under field conditions.

Unfortunately, feral pig populations were low at the time of each trial due to unfavourable seasonal conditions and therefore the number of feral pigs available to trial the device in the wild was low. Conversely, non-target species were abundant and the results showed that the HogHopper™ was able to prevent all of them from accessing bait material, with the exception of the earlier Boar Buffet unit being breached by a wild dog (*Canis lupus dingo*) in the Daintree National Park. This however was an isolated incident as wild dogs were present in several other trial sites and they showed no interest in the device or the free-feed PIGOUT® bait. Despite this, wild dogs are protected in some areas of Australia thus it was necessary to modify the design to prevent such occurrences. The new design primarily focuses on lifting as opposed to pushing, because pigs commonly use their snout

## Commercial-In-Confidence

to lift rocks, logs and soil when foraging for food. It was expected that the weight and resistance of the door would make lifting difficult for other species, another feature preventing non-target species access to toxic bait within the device. The new design is also made entirely of aluminium and is almost fully enclosed, apart from the small perforations on the doors to allow the bait smell to disperse from the device. This design became the final article-of-commerce and was subsequently used during the final field efficacy trial.

### Localised feral pig population reduction.

The final field efficacy trial (using the newly designed HogHopper™) demonstrated that the HogHopper™ delivering 1080 laced barley or toxic PIGOUT® was able to reduce feeding feral pig populations by 90-100% respectively. Moreover, the HogHopper™ was able to prevent all non-target species from accessing toxic bait material, including small rodents.

### National tender process.

14 formal Expressions of Interest were received (29 initial enquiries) for the commercial manufacture of the HogHopper™, and after careful consideration seven applicants were shortlisted and invited to submit a tender for the manufacture of the HogHopper™. Several of the tender applications were highly competitive and three of the shortlisted companies were invited to submit a HogHopper™ prototype for assessment. These nominated companies were: Plasteel in Adelaide, SA; Challenge Implements in Ballarat (potentially Orange, NSW), Vic and Hans Steel P/L in Bundaberg, Qld.

After completing the standardised evaluation process for each HogHopper™ prototype, the decision was made by IA CRC and ACTA to award both Plasteel (South Australia) and Hans Steel (Queensland) with contracts for the manufacture of the HogHopper™. To justify this, both companies were the most competitive at the 500 unit p.a. mark where current market research suggests annual sales are likely to be. In addition, logistically Plasteel is better suited to supply southern and western Australia and immediate export markets (where they can work directly with Adelaide IA CRC staff) whereas Hans Steel is better suited to supply Queensland markets. Therefore, the decision will reduce freight costs and will provide the retailer with added insurance in case one company decides to withdraw from the agreement unexpectedly.

### Product launch and national advertising.

The initial product launch was undertaken at the AWMS conference in Torquay, Victoria. Numerous individuals and organisations attended the conference which included guests from Australia and overseas (New Zealand, South Africa and the USA). Approximately 100 people attended the product launch presentation, all of whom were highly supportive of the product. During the launch, the IA CRC conducted a brief presentation on the history of the device, which was followed by a product functionality demonstration.

The media release generated prior to the initial launch sparked considerable interest in the HogHopper™, which subsequently led to two radio interviews (Townsville, Orange), two newspaper interviews (Darwin, Weipa) and a piece on WIN news (Dubbo). Additionally, it is anticipated that similar interest will occur following the media release prior to the AVPC conference during June 2011.

The HogHopper™ has gained extensive support as a consequence of the national and international conference presentations. In particular, the presentation by the IA CRC implemented at the *International Wild Pig Conference*, Pensacola, Florida (2010) was received extremely well. As such, 25 HogHopper™s have since been sent to America for

target specificity testing (non-toxic trial) and are currently being tested in Texas, Alabama, Mississippi, Oklahoma, Florida and Missouri. If it is found that the HogHopper™ can successfully exclude non-target species from accessing bait, it is anticipated that it will become an integral part of America's future feral pig control programs; where toxic baiting has not been permitted due to non-target concerns.

Initial limited market research on the HogHopper™ indicates first year sales of 70 to 100 units within government and non-government organisations. This, in addition to private landholder contributions, is likely to put first year sales in the vicinity of 200 units. However, many in the field see this as a gross underestimate.

## **6. Discussion:**

### Utilisation and target specificity under field conditions.

All non-toxic field efficacy trials were essential for developing the final article-of-commerce that could be used in multiple feral pig affected habitats across Australia. Early trials indicated that wild dogs could access bait from the initial prototype and that rodents could pass through the wire exclusion mesh to damage the baits inside the hopper. Moreover, the original design was large and robust and subsequently heavy and difficult to deploy. Therefore, several significant alterations were devised which ultimately led to a far more user friendly and target specific device. The new design also provides greater bait protection hence keeping bait fresher for longer.

### Localised feral pig population reduction.

The final field efficacy trial confirmed that the HogHopper™ is a highly useful and target specific tool that can be used to control feral pigs. The trial also provided invaluable information for the best practice use of the device, which has become a key component of the field user manual. The two most important messages from the current trial were baiting is most effective in dry conditions when food is scarce and a free-feed learning phase (teaching the animals to use the lift doors before they are completely closed) is essential for best results. This step was essential for progressing to the latter stages of the program with complete confidence in the product and its capabilities.

### National tender process.

The national tender process was highly successful. Fortunately, numerous aluminium fabrication companies applied for the manufacturing contract and thus, we were essentially spoilt for choice i.e. it was possible to select three highly suitable companies rather than having to select an imperfect company due to limited choice. The final product is now of the utmost quality, and will retail at an affordable price (c. \$800). As such, it is more likely to be adopted by a variety of land managers and less likely to be reproduced by competitors.

### Product launch and national advertising.

A combination of presentations, background documents, media releases and the product launch provided excellent exposure for the HogHopper™. Each form of advertising has reached a variety of end users, from people within government organisations through to private landholders. Both sets of key end users now realise the benefit of the device and are keenly awaiting sales and distribution. ACTA will be responsible hereafter for additional advertising and extension as they are the commercial distributor of the product. This will help ensure the continued success of the HogHopper™ into the future.

**7. Estimate figures for any of the output measures that may be relevant to your project (for the full period of this project).**

Potential first year HogHopper™ sales

*Government organisations* – Initial market research indicates 70 – 100 units.

*Private land managers* – Based on general interest and enquiries, first year sales are likely to be in the vicinity of 100 units.

Impacts

The HogHopper™ is highly target specific as a consequence of stringent non-toxic field testing. In addition, the final field efficacy trial demonstrated that the HogHopper™ could reduce feral pig populations by 90% to 100% whilst delivering toxic grain or PIGOUT® and it was able to prevent all non-target access. A product of this nature (that also reduces labour intensity and protects bait from weather) has the potential to be adopted by government land managers and private land managers alike. Thus, the HogHopper™ will undoubtedly help to reduce the annual \$100 million dollar damage bill to agriculture caused by feral pigs and their many detrimental impacts to the natural environment. Furthermore, the HogHopper™ will help to keep feral pig numbers at a minimum to reduce disease transmission should an outbreak occur.

Publications

*Sticker* – a promotional sticker has been created that can be readily distributed at a low cost.

*Poster* – A large poster that can be put on display at conferences and workshops has been produced as an additional form of advertising (Appendix 5).

*Brochure* – Field user manual that promotes best practice use of the HogHopper™ has been produced (Appendix 5).

*Journal article* – The IA CRC will prepare and submit a paper to Wildlife Research or similar that summarises all results obtained during non-toxic and toxic field trials.

*Presentations* – The IA CRC have attended and presented at several international and national conferences since the beginning of the HogHopper™ project. These presentations have been well received by all and have even sparked considerable interest, particularly in America where a device of this nature will be essential for toxic bait delivery.

Media

*Media release* - A media article and media request form was sent to Media Monitors. Thereafter, the media article was distributed to a confirmed 720 media outlets Australia-wide. These outlets included press, radio and television in both metropolitan and regional areas (Appendix 4).

*Feral Flyer* – The media release and several other HogHopper™ related articles have been posted in Feral Flyer throughout the life of the project (Appendix 3). Feral Flyer is an IA CRC produced fortnightly newsletter that is electronically distributed to over 1,200 members.

*Interviews and articles as a result of advertising* – The media release has resulted in two radio interviews (Townsville, Orange), 2 newspaper interviews (Darwin, Weipa) and a piece on WIN news (Dubbo). Requests for interviews as a consequence of the initial media release continue to occur.