



Fact sheet

August 2020

The economic impact of feral pigs on crops & livestock

Aim: To quantify damage to broad-acre industries and determine least-cost control methods

Background

Feral pigs inhabit around 38% of Australia’s land mass and have reproductive potential equivalent to that of rabbits. The cost of feral pigs across wool, sheep and crops in NSW has been previously estimated at around \$14 million per annum. Feral pig populations have the capacity to recover quickly from control methods and other setbacks such as droughts. This LLS funded study calculated the enterprise level opportunity cost of feral pigs and the benefit of control in NW NSW.

Survey - Damage to crops

A survey conducted by Ag Econ collated 123 landholder responses and covered 422,000 ha across NW NSW. Grazing area dominated land use, followed by cropping and unused timbered area. The survey results combined with results from 18 research journal articles from Australia and the United States were used to model distributions of crop and livestock damage, as well as the effectiveness of control methods.



Map showing the location of survey respondents

The meta-analysis found the highest pig damage in broad acre crops occurred in chickpeas, faba beans and sorghum ahead of wheat, barley and cotton. This is consistent with published research that found feral pigs selectively consume food sources such as pulse crops and sorghum.

Figure 1: Survey results - feral pig damage experienced in broad acre crops

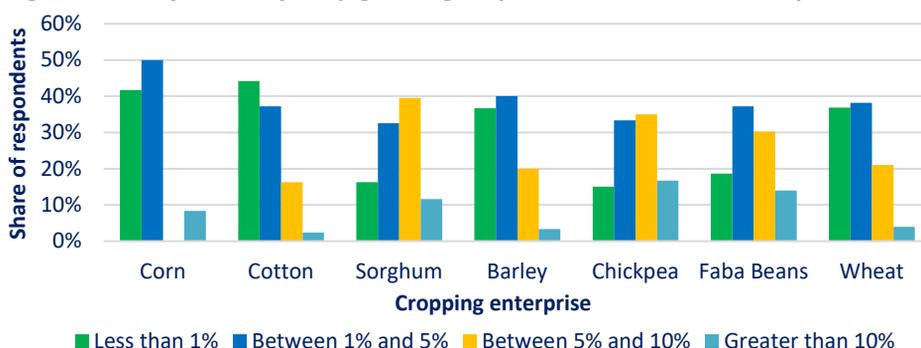
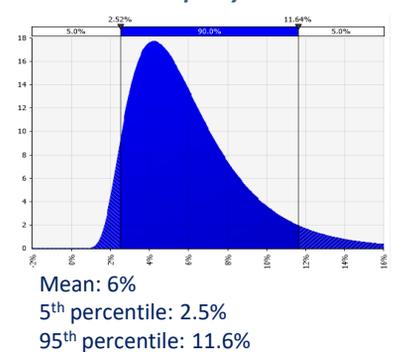


Figure 2: Final distribution: Chickpea yield loss %



Survey - Damage to livestock enterprises

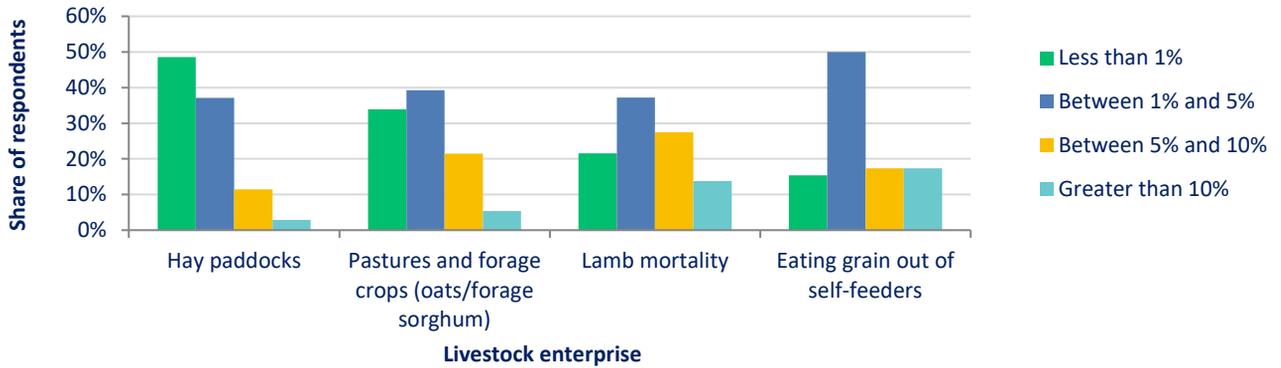
Survey results suggest that lamb mortality is one of the largest impacts feral pigs have on livestock enterprises. Over 41% of respondents estimated feral pigs contributed to 5% or more of lamb mortality. Respondents experienced losses due to feral pigs eating grain out of feeders and damage to pastures

and forage crops.

Some survey respondents also commented of instances where lamb mortality as a result of the pests exceeded 10%.

“Heavy pig baiting programs have reduced our lambing losses from a high of 60%”

Figure 3: Survey results - feral pig damage to livestock enterprises



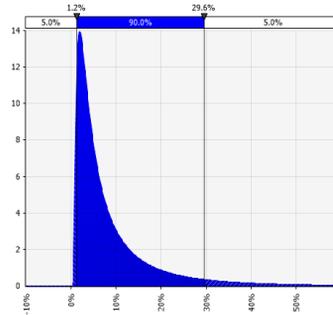
The study

Findings indicated the opportunity cost of feral pigs was highly variable depending on a number of environmental and market factors. The study accounted for variability by using probability distributions reflecting the range of possible values and the probability of them occurring. Within the analysis, variables represented by distributions included:

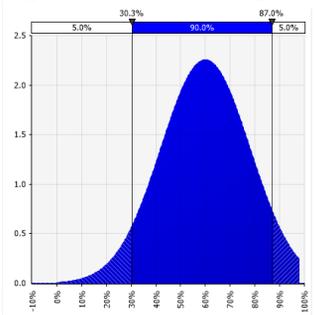
- Feral pigs damage to each enterprise (% of yield)
- Livestock weaning rates
- Commodity yields and prices
- The cost and effectiveness of each control method

The model randomly selected a value from each distribution to perform the calculations, repeating the process twenty thousand times to create a probability distribution for each result.

Figure 4 & 5: Final distributions: Lamb mortality loss %



Effectiveness of baiting



“The relatively higher cost of exclusion fencing resulted in potentially higher per hectare losses” Study finding



Results

The analysis found that in most instances there were net benefits of undertaking feral pig control. Table 1 presents the range of results for each enterprise.

Chickpeas, a high-value crop that can experience extensive damage from feral pigs had the highest potential net benefits, up to \$100 /ha. The highest net benefits of control occurred when modelling above average enterprise yields, high commodity prices, or a combination of these factors.

Each control measure was independently assessed, however it is possible that a combination of approaches would deliver synergies in feral pig control and increase the overall per hectare effectiveness. In addition, the use of a coordinated, area wide management could generate higher than average net benefits, sustained over a longer period.

The analysis found that the most cost effective control methods across the majority of enterprises were baiting and aerial shooting.

These were followed by trapping and ground shooting. Exclusion fencing and ground shooting were more expensive per hectare.

Negative benefits occurred when the benefits (avoided yield loss multiplied by value of the commodity) do not exceed the cost of control. These negative results occurred more often with the higher cost control methods and lower commodity prices.

Exclusion fencing was best suited to high value enterprises that experienced year-on-year damage from feral pigs for example, lambing paddocks. Exclusion fencing may provide additional benefits of keeping out other pests (foxes for example). One consideration of exclusion fencing is that the feral pig population is shifted rather than reduced. As a control option, exclusion fencing does not contribute to a holistic area wide management plan.

The long term benefit will be highest when the feral pig population is suppressed. This can be achieved by regular, area wide control programs.

Table 1. Results summary by enterprise

Enterprise	Net Benefit range		Benefits highest when...	
	\$/ha		Anticipated damage by feral pigs exceeds	Anticipated enterprise yields exceed
Barley for grain	-\$15.40	\$23.00	2.5%	2.5 t/ha
Cotton lint (irrigated)	-\$5.70	\$70.00	0.9%	11.30 bales/ha
Chickpeas	-\$4.40	\$100.50	6.0%	2.3 t/ha
Faba beans	-\$8.50	\$61.90	5.5%	2.7 t/ha
Hay	-\$12.10	\$53.50	4.0%	3 t/ha
Maize for grain	-\$15.10	\$24.30	1.25%	4.8 t/ha
Sorghum for grain	-\$12.00	\$32.80	3.0%	3.5 t/ha
Wheat for grain	-\$15.70	\$22.60	2.5%	2.1 t/ha
Sheep and lambs	-\$6.40	\$22.20	9.0%	Weaning % < 85%

The results for this analysis are presented annually; however, the benefits of thorough control can flow-on to other enterprises and subsequent seasons.



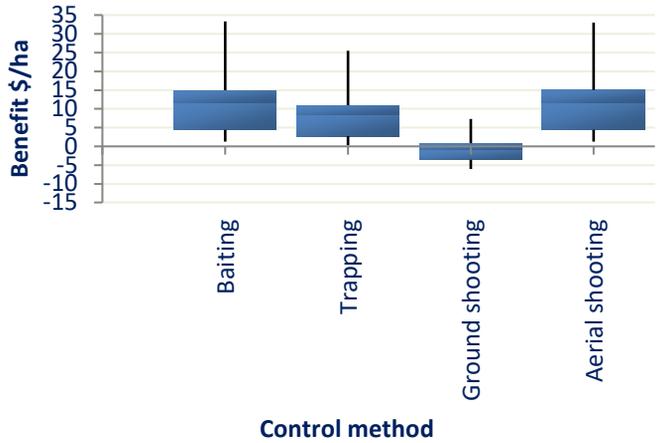
Results continued...

Control of feral pigs in sorghum can return up to \$33 /ha (Figure 6). The difference in results between control methods largely came down to efficacy. The most effective control methods, baiting and aerial shooting returned the highest results, followed by trapping, and lastly ground shooting. In the case of sorghum, trapping was 4% likely and ground shooting 68% likely to result in a net loss per hectare – indicating the low percentage of pigs controlled not exceeding control costs.

The majority of the time there were net benefits when baiting and aerial shooting occurred. Figure 7 shows that the feral pig control option of baiting generated the largest per hectare returns where high yield damage was minimised in high value crops, such as cotton and chickpeas. Even in the enterprises with lower benefits, 9 times out of 10 there was an economic net benefit of feral pig control.

Covering the largest area possible in a control program may also create economies of scale, reducing control costs and further improving net benefits.

Figure 6: Net benefit of feral pig control in sorghum crops



Further information:

- For the full report visit www.lls.nsw.gov.au or www.agecon.com.au
- Contact your local LLS representative for information on current area wide management strategies ph. 1300 795 299

Figure 7: Net benefits of feral pig control using baiting (Box and whisker plot)

