





Department of Agriculture, Fisheries and Forestry Australia



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APPENDIX 1 LIVESTOCK INDUSTRIES IN AUSTRALIA¹¹⁶

Australia is a major producer and exporter of livestock, livestock products and genetic material. Animal production in Australia is based largely on extensive grazing and is dominated by wool, sheepmeat, beef and dairy production. Australia also has smaller intensive pig and poultry industries. Trends in livestock numbers are shown in Table A1.1.

Livestock industries, in one form or another, are located across most agricultural and pastoral areas of Australia.

In 2009–10, the gross value of Australian livestock and livestock products was estimated to be \$19.1 billion. Exports were estimated to be worth \$13.4 billion.

Meat and other products

Australia has a highly developed meat industry and is a major producer of meat and meat products. In 2009–10, the value of Australian livestock slaughtering was estimated to be \$13.1 billion.

Australia is the world's largest exporter of beef and veal, and the second largest exporter of sheepmeat. In 2009–10, Australian meat exports (not including live animals) were estimated to be worth \$6.4 billion. Selected production statistics are shown in Table A1.2.

¹¹⁶ All figures provided in the tables in this appendix are based on Australian financial years, which run from 1 July to 30 June.

Table A1.1 Livestock numbers (millions), 2006–10

Livestock	2006–07	2007–08	2008–09	2009–10
Sheep	85.7	76.9	72.7	67.7
Cattle				
Beef	25.4	24.8	25.3	24.3
Dairy	2.7	2.5	2.6	2.5
Total ^a	28.0	27.3	27.9	26.7
Pigs	2.6	2.4	2.3	2.3

a Figures may not add to totals due to rounding

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Commodity Statistics 2010*, Canberra, 2010.

Table A1.2 Volume of Australian meat exports (kilotonnes), 2007–10

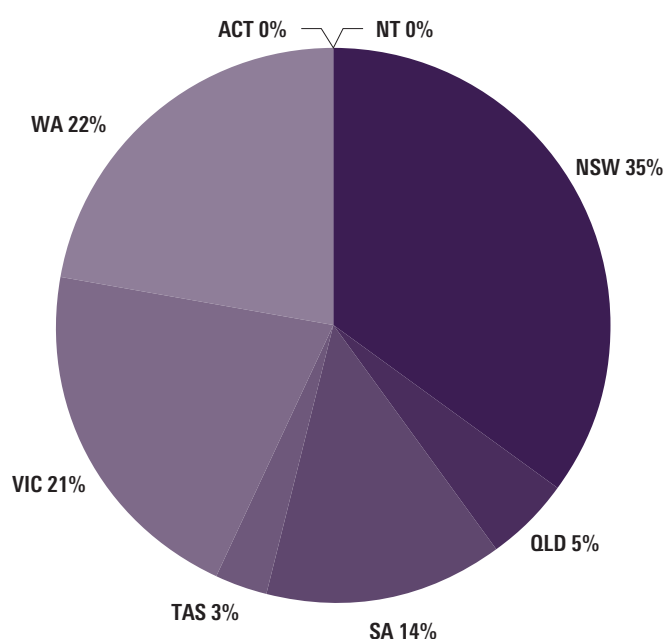
Type of meat	2007–08	2008–09	2009–10
Beef and veal	979	1006	934
Mutton	163	151	117
Lamb	167	162	160
Pork	39	32	30
Poultry	30	37	28

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Commodity Statistics 2010*, Canberra, 2010.

Australia also produces and exports smaller quantities of meat from goats, kangaroos, emus, ostriches, deer, wild boars, possums, crocodiles and camels. It exports substantial quantities of animal products, such as hides, skins, wool, rendered meals and animal food.

Sheep: meat and wool

Sheep are used to produce meat and wool over a wide range of environments in Australia, from the arid and semiarid inland to the higher rainfall areas of south-eastern Australia (Figure A1.1). Most Australian sheep are produced as part of mixed-farming enterprises, frequently with cropping and beef production.



ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; QLD = Queensland; SA = South Australia; TAS = Tasmania; VIC = Victoria; WA = Western Australia
Source: Australian Bureau of Statistics, 7121.0 – *Agricultural Commodities*, Canberra, 2010.

Figure A1.1 Sheep distribution by state and territory, 30 June 2010

In 2009–10, sheep numbers continued a long-term downward trend and dropped to 67.7 million, a decrease of 60% from a national flock of 173.8 million in 1990. Favourable seasonal conditions in early 2010–11, combined with improving returns on wool production and strong lamb prices, are likely to increase flock retention and slow the rate of decline of the sheep flock over the short term.

A decreased emphasis on wool production has resulted in a decline in flock numbers, as significant numbers of wethers (nonbreeding adult sheep), previously used in wool production, are turned off. A long-term decrease in the demand for raw wool and competition from other

fibres, coupled with growing demand for Australian lamb exports in the United States, Europe and Asia, has led to a greater emphasis on prime lamb production. Farming of specialty meat breeds, such as Dorper and Damara (which do not produce any harvestable wool) is a small but growing sector.

Shorn wool production fell by 9% to 371 000 tonnes in 2008–09 and is estimated to have fallen by a further 8% in 2009–10 to around 340 000 tonnes. Wool cut per head is forecast to increase slightly in 2010–11, reflecting an assumption that seasonal conditions will improve significantly. Any further increase in cut per head is expected to be moderated by the increasing emphasis on lamb production, which reduces wool cut by increasing the proportion of meat breeds in the flock and the number of ewes and lambs relative to wethers. The average to above-average rainfall in south-eastern Australia in the second half of 2009–10 and early 2010–11 is expected to support relatively good fleece weights in the spring 2010 shearing season.

Total wool exports decreased by 9% in 2009–10 to 401 000 tonnes in greasy equivalents.¹¹⁷ Production figures for the wool and sheepmeat industries are shown in Table A1.3.

Table A1.3 Australian sheep production, 2008–10

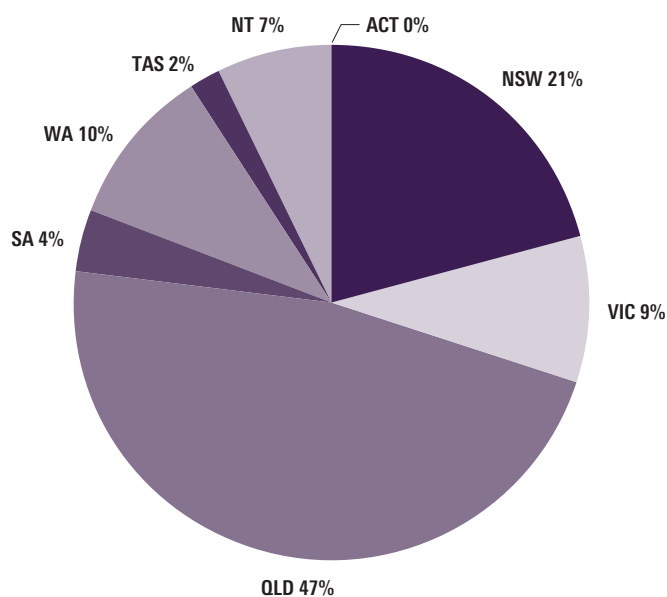
Sheep production	2008–09	2009–10
Sheep numbers (millions)	72.7	67.7
Sheep slaughterings (millions)	10.5	7.3
Lambs slaughterings (millions)	20.3	19.5
Live-sheep exports (millions)	4.1	3.1
Total wool production (kilotonnes)	420.3	382.3
Mutton production (kilotonnes)	219.8	161.8
Lamb production (kilotonnes)	415.9	412.5
Value of wool exports (\$ million)	2322.0	2307.0

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Commodities* 17(4), Canberra, December 2010.

Beef cattle

Cattle are raised over much of Australia (see Figure A1.2). Across northern Australia, cattle are produced on large cattle holdings, where they graze native pastures at low stocking rates. *Bos indicus* breeds dominate because they are better adapted to the tropical conditions in the north. The main outputs are beef and animals for lot feeding and live cattle export.

In southern Australia, cattle are produced on smaller holdings, grazing largely on improved pastures. Breeds derived from *Bos taurus* dominate, and smaller, younger animals are produced, largely for the Australian domestic market.



ACT = Australian Capital Territory; NSW = New South Wales; NT = Northern Territory; QLD = Queensland; SA = South Australia; TAS = Tasmania; VIC = Victoria; WA = Western Australia
Source: Australian Bureau of Statistics, 7121.0 – *Agricultural Commodities*, Canberra, 2010.

Figure A1.2 Beef cattle distribution by state and territory, 30 June 2010

Improved seasonal conditions in south-eastern and northern Australia through most of 2010 resulted in reduced turnoff. The improved conditions contributed to a small rise of 300 000 animals in the national herd in 2009–10, to 28.2 million.

The average unit price for beef decreased by 3% in 2009–10 to 288 cents/kilogram.

Australian beef exports decreased by 7% in 2009–10 to 899 000 tonnes, and the value of these exports decreased by more than 18% to around \$4 billion.

Live cattle exports increased by 6% in 2009–10 to 906 000 animals, but are expected to decrease significantly in 2010–11 as a result of decreased exports to Indonesia (Table A1.4).

117 Australian Bureau of Agricultural and Resource Economics and Sciences (2010). *Australian Commodity Statistics 2010*, Canberra.

Table A1.4 Australian beef cattle production, 2008–10

Beef cattle production	2008–09	2009–10
Total beef cattle (millions)	25.3	24.3
Slaughterings (millions)	8.7	8.4
Live-cattle exports (millions)	0.9	0.9
Beef production (kilotonnes)	2147.9	2112.6
Beef exports (kilotonnes)	967.7	899.0
Export value (\$ million)	4857.2	3953.2

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Commodities* 17(4), Canberra, December 2010.

Pigs

Pigmeat production increased by 3% during 2009–10, while export volumes of Australian pigmeat decreased by 7%. Annual exports now account for around 14% of total Australian pigmeat production.

The number of pigs slaughtered increased by 2% in 2009–10 to 4.6 million (Table A1.5). This reflects lower feed grain prices — the average price of feed wheat delivered to Sydney fell by 25% in 2009–10 to \$237/tonne, and the price of feed barley fell by 17%.

Table A1.5 Australian pig production, 2008–10

Pig production	2008–09	2009–10
Total pigs (millions)	2.3	2.3
Breeding sows (thousands)	277.8 ^a	298.0 ^b
Slaughterings (millions)	4.5	4.6
Pigmeat production (kilotonnes)	324.0	332.0
Pigmeat exports (kilotonnes)	32.0	30.0
Value of pigmeat exports (\$ million)	123.7	109.0
Gross value of production (\$ million)	894.9	858.0

^a Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Commodity Statistics 2010*, Canberra, 2010.

^b Australian Bureau of Agricultural and Resource Economics, *Australian Commodities* 17(1), Canberra, March 2010.

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Commodities* 17(4), Canberra, December 2010.

In recent years, the number of farms with pigs has declined steadily, while the number of pigs has been more stable. A report by the Australian Bureau of Statistics (ABS) indicated that, at 30 June 2009, there

were 1835 pig farms holding a total of 278 000 sows.¹¹⁸ Queensland is the largest producing state, followed by South Australia and New South Wales.

Poultry: meat and eggs

Poultry farming in Australia is an intensive industry, growing birds for meat and egg production. The poultry industry has grown over recent years, resulting in lower retail poultry prices. Meat chickens comprise around 81% of the flock, followed by layer hens at 12%. The chicken meat industry is dominated by two large companies and several medium-sized operators, with most operations located within 50 kilometres of capital cities.

In 2008–09, there were around 1400 businesses producing almost 233 million dozen eggs for human consumption. Approximately 95% of eggs are produced under intensive production systems, with the balance from free-range and other systems.

The value of egg production increased by 2% in 2009–10 to \$420 million (Table A1.6).

Table A1.6 Australian poultry production, 2008–10

Poultry production	2008–09	2009–10 ^a
Poultry slaughterings (millions)	474.8	465.7
Meat chickens (millions) ^b	73.9	82.8
Layer hens and pullets for egg production (millions) ^b	14.8	12.6
Poultry meat production (kilotonnes)	866.3	872.1
Value of egg production (\$ million)	412.9	420.0
Value of meat production (\$ million)	1861.5	1741.8
Exports of poultry meat (kilotonnes)	37.1	27.8
Value of poultry meat exports (\$ million)	42.7	36.2

^a Preliminary figures

^b Figures for calendar years 2008 and 2009. Source: Australian Bureau of Statistics, 7121.0 – *Agricultural Commodities*, Canberra, 2010.

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Commodity Statistics 2010*, Canberra, 2010.

118 Australian Bureau of Statistics (2010). 7121.0 – *Agricultural Commodities*, Canberra.

Goats

Australia is the world's largest exporter of goatmeat, despite the small size of the Australian goatmeat industry. The industry is steadily growing, based on exports of live goats and goatmeat. The domestic market for goatmeat is small but growing, due to an influx of migrants familiar with goatmeat. In 2009–10, 1.76 million goats were slaughtered, supporting meat exports of 27 363 tonnes valued at \$104 million. The two largest markets were the United States and Taiwan. In addition, 130 500 live goats with an estimated value of \$11 million were exported to markets in Malaysia, Singapore and Brunei.

Australia also has niche goat industries producing goat milk, angora, cashmere and mohair. The total value of these industries was estimated to be around \$2.5 million in 2009–10.

Game and other livestock industries¹¹⁹

Australia is renowned for producing high-quality game meats from animals grazed on the country's extensive native grasslands. Game products include venison, kangaroo and buffalo.

Venison

In 2005–06, there were 533 deer farms in Australia carrying a total of 68 600 animals. Deer farms occur throughout Australia, but production is concentrated in Victoria, South Australia, New South Wales and Tasmania. In 2009–10, the industry had a gross value of production of \$2.4 million, including the value of production of meat and antler velvet. The number of deer processed in 2009–10 was 11 101, only 20% of the peak level of production in the early 2000s. The price paid to farmers for venison during the 2009–10 financial year averaged around \$3.80/kilogram (hot carcass weight). Venison prices have been increasing in recent years in response to lower production in Australia and also in New Zealand, the world's largest producer of venison.

Kangaroo

The gross value of production of the kangaroo industry in 2009–10 was \$24 million, down from a peak of \$55 million in 2005–06. The decline is due to an extended period of drought and recent market access issues with the Russian Federation. In 2009–10, approximately

1.9 million kangaroos were harvested, yielding 18 500 tonnes of meat for human consumption and pet food.

The value of kangaroo meat exports decreased by 55% in 2009–10 to \$15.8 million. In the past, more than 70% of kangaroo meat exports have gone to the Russian Federation, but market access issues reduced this share to only 9% in 2009–10. The major export destinations for kangaroo meat in 2009–10 were South Africa (26% of total exports), Belgium (15%), Germany (11%) and Papua New Guinea (11%).

Buffalo

In 2006–07, there were 67 buffalo farms in Australia, with 13 559 buffalo. In addition, there was a feral population of about 60 000 animals. The gross value of production of the buffalo industry in 2009–10 was \$2.8 million, mainly from live exports from the Northern Territory. Live exports decreased to 3737 animals in 2009–10, down from 4213 in 2008–09 and the peak of 4923 in 2006–07. The price received by farmers was \$728 per animal, compared with an average of \$760 per animal over the previous four years. The main markets in the past five years have been Indonesia and Malaysia.

In 2009–10, 136 buffalo were slaughtered, compared with the peak of 1896 in 2002–03. Exports of buffalo meat are close to zero, as the Northern Territory now has no export abattoirs.

Australia has three commercial dairy buffalo herds. Production from one farm is increasing, with buffalo cheeses now widely distributed in Australia.

Dairy

The dairy industry is the third largest rural industry in Australia by value of production. Victoria has 62% of the national dairy cattle herd, followed by New South Wales (13%) and Queensland (7%). Most dairy farms are family owned and operated.

The Australian dairy herd has declined by around one-quarter since 2000, reaching 1.63 million animals in 2009 (Table A1.7). Although dairy cow numbers have declined in all states, the largest fall has occurred in Victoria, mainly due to the effects of the continuing drought in the irrigation-dependent dairying areas of northern Victoria.

Australian milk production decreased from around 9388 million litres in 2008–09 to around 9016 million litres in 2009–10. At the same time, export earnings for dairy products decreased by 23% to \$2066 million.

119 Information on game and other livestock industries is sourced from Rural Industries Research and Development Corporation (2009), *National Research, Development and Extension Strategy for New and Emerging Industries — Industry, Overview* Publication no. 09/138, RIRDC, Canberra.

Table A1.7 Australian dairy production, 2008–10

Dairy production	2008–09	2009–10 ^a
Dairy cow numbers (millions)	1.68	1.63
Total milk production (million litres)	9388.2	9015.9
Milk yield per cow (litres)	5601.5	5531.2
Gross value of milk production (\$ million)	3987.6	3362.9

^a Preliminary figures

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Commodity Statistics 2010*, Canberra, 2010.

In 2009–10, Australia exported dairy products worth \$2.07 billion to 122 countries (Table A1.8).

Fisheries and aquaculture

Australia has a diverse wild-catch fishery and a popular recreational fishery of both native and introduced species. In 2009–10, the estimated gross value of fisheries production was around \$2.1 billion. The estimated production and value of individual fisheries for 2009–10 are shown in Table A1.9.

Table A1.9 Estimated Australian fisheries production by species, 2009–10

Fishery	Volume of production (kilotonne)	Value of production (\$ million)
Abalone	5.6	175.6
Oysters	14.5	98.0
Prawns	25.3	303.3
Rock lobster	9.8	373.5
Salmonids	32.2	357.4
Scallops	8.3	28.5
Tuna	11.4	131.7
Other fish	120.4	402.1
Other crustaceans and molluscs	16.3 ^a	216.3
Total^b	243.6	2086.5

^a Volume excludes pearl oysters

^b Figures may not add to totals due to rounding

Source: Australian Bureau of Agricultural and Resource Economics – Bureau of Rural Sciences, *Australian Commodities: September quarter 2010*, Canberra, September 2010.

Aquaculture includes many major species and occurs Australia-wide, from tropical to temperate areas, and from marine waters through brackish to fresh waters. It is an important component of Australian fisheries production. Between 1996–97 and 2008–09, aquaculture's share of the total value of Australian fisheries production grew from 21% to 39%. The volume of aquaculture production in Australia rose by 8% in 2008–09, to approximately 69 572 tonnes. In contrast, the value of production fell slightly, by 1%, to \$861 million.

Figures for the production and gross value of aquaculture harvests in 2008–09 (the latest available figures) are shown in Table A1.10.

Table A1.8 Australian dairy production and exports, 2007–10

Dairy product	Total production			Exports		
	2007–08	2008–09	2009–10	2007–08	2008–09	2009–10
Fresh milk (megalitres)	9223	9388	9016	68	69	72
Cheese (kilotonnes)	361	342	345	203	146	168
Butter and butter fat (kilotonnes)	128	148	128	57	70	74
Milk powder (kilotonnes) ^a	317	369	324	214	286	227

^a Includes whole milk powder, skim milk powder and casein

Source: Australian Bureau of Agricultural and Resource Economics and Sciences, *Australian Commodity Statistics 2010*, Canberra, 2010.

Table A1.10 Australian aquaculture production, 2008–09

Aquaculture production	Volume of production (tonnes)	Gross value of production (\$'000)
Fish		
Barramundi	2 964.4	31 634.4
Salmonids	29 722.2	322 634.5
Silver perch	282.6	3 112.6
Tuna	8 785.6	157 776.6
Other ^a	3 996.1	36 602.5
Total ^b	45 751.0	551 760.6
Crustaceans		
Marron	79.6	2 197.0
Prawns	3 985.0	56 841.0
Redclaw	68.0	1 121.0
Yabbies	56.2	939.3
Total	4 188.8	61 098.3
Molluscs		
Abalone	638.8	22 656.3
Mussels	3 362.4	8 830.0
Oysters — edible	14 081.2	92 399.4
Oysters — pearl	na	90 000.0
Other ^c	na	648.4
Total ^c	18 082.4	214 534.1
Production not included elsewhere	1 550.3	33 752.2
Total^{b,d} (all categories)	69 572.5	861 145.3

na = not available

a Includes eels, other native fish and aquarium fish

b Figures may not add to totals due to rounding

c Includes scallops and giant clams

d Total volume excludes pearl oysters

Source: Australian Bureau of Agricultural and Resource Economics – Bureau of Rural Sciences, *Australian Fisheries Statistics 2009*, Canberra, 2010.

Exports of Australian edible and non-edible fisheries products, shown in Table A1.11, were worth \$1.25 billion in 2009–10.

Bees

Australia has approximately 10 000 registered beekeepers, but most honey is produced by a relatively small number of businesses. Approximately 62% of total honey production is by businesses operating more than 500 hives (approximately 263 businesses in 2009–10). Only 16% of Australian honey production is by businesses with 250 hives or fewer.

Most honey bee operations are small, family-owned and operated businesses with fewer than 500 hives. Most smaller operations, particularly those with fewer than 250 hives, depend on a range of income sources in addition to beekeeping and derive most of their income from other enterprises, investments or government sources. Larger operations (those with more than 500 hives) tend to depend on the honey bee business as the sole source of income.

In 2009–10, the estimated honey crop was 160 150 tonnes. The gross value of production of the whole industry was estimated to be \$64 million, of which approximately \$54 million was from honey sales. A small but growing sector is the export of packaged bees to the United States for the pollination industry. This export trade was valued at approximately \$2.5 million in 2009–10.

Further information

Further information on each of the industries may be found at the relevant industry websites (see Appendix 5 for web addresses).

Other Australian agricultural statistics and forecasts are available from the Australian Bureau of Agricultural and Resource Economics and Sciences website.¹²⁰

¹²⁰ www.abares.gov.au



Department of Primary Industries Victoria

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Department of Primary Industries Victoria



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APPENDIX 3 INVESTIGATIONS OF EMERGENCY DISEASES

The table below lists investigations during 2010 of suspect emergency animal diseases listed on Australia's National List of Notifiable Diseases. This table excludes disease investigations recorded elsewhere in individual programs, such as equine infectious anaemia.

Table A3.1 Investigations of suspect emergency animal diseases listed on Australia's National List of Notifiable Diseases, 2010

Disease	Species	State	Month	Highest response level ^a	Finding
African swine fever	Porcine	WA	Jan	3	Negative
	Porcine	WA	Sep	3	Negative
American foulbrood (<i>Paenibacillus larvae</i>)	Honey bee	Tas	Jan	2	Positive
	Honey bee	Tas	Mar	2	Positive
	Honey bee	Tas	Apr	2	Positive (2 related investigations)
	Honey bee	Tas	May	2	Positive
	Honey bee	Tas	Jul	2	Positive
Aujeszky's disease	Porcine	Tas	Jan	2	Negative
Australian bat lyssavirus	Canine	Qld	Jun	3	Negative (3 unrelated investigations)
	Feline	Qld	Apr	2	Negative
Bluetongue — clinical disease ^b	Bovine	NSW	Apr	2	Negative
	Caprine	NSW	Apr	2	Negative
Brucellosis (<i>Brucella abortus</i> , <i>B. suis</i> , <i>B. canis</i> and <i>B. melitensis</i>)	Canine	NT	Aug	2	Negative
	Ovine	Qld	Oct	2	Negative (3 unrelated investigations)
	Porcine	Qld	Oct	2	Negative (5 unrelated investigations)
	Porcine	Qld	Oct	5	Positive <i>Brucella suis</i> confirmed on culture
	Porcine	Qld	Nov	2	Negative (3 unrelated investigations)
	Porcine	Qld	Dec	2	Negative (4 unrelated investigations)
Contagious equine metritis	Equine	NSW	Aug	2	Negative
	Equine	SA	Oct	2	Negative
Enzootic bovine leucosis	Bovine	NSW	Jul	2	Negative
Equine influenza	Equine	NSW	Feb	2	Negative
	Equine	NSW	Mar	2	Negative
	Equine	NSW	Apr	2	Negative
	Equine	NSW	Jun	2	Negative (2 unrelated investigations)
	Equine	NSW	Jul	2	Negative
	Equine	NSW	Aug	2	Negative
	Equine	NSW	Sep	2	Negative
	Equine	NSW	Oct	2	Negative (2 unrelated investigations)
	Equine	NSW	Dec	2	Negative (2 unrelated investigations)
	Equine	Qld	Jan	2	Negative

Table A3.1 Investigations of suspect emergency animal diseases listed on Australia's National List of Notifiable Diseases, 2010 (continued)

Disease	Species	State	Month	Highest response level ^a	Finding
Equine influenza <i>(continued)</i>	Equine	Qld	Jun	2	Negative (2 unrelated investigations)
	Equine	Qld	Jul	2	Negative
	Equine	Qld	Sep	2	Negative
	Equine	Qld	Nov	2	Negative
	Equine	SA	May	3	Negative
	Equine	SA	Nov	3	Negative
	Equine	Vic	Mar	3	Negative
	Equine	Vic	Sep	2	Negative
	Equine	WA	Jan	2	Negative
	Equine	WA	Mar	2	Negative
	Equine	WA	Sep	3	Negative
	Equine	WA	Oct	2	Negative
European foulbrood <i>(Melissococcus pluten)</i>	Honey bee	Tas	Oct	2	Positive
Foot-and-mouth disease	Bovine	NSW	Feb	3	Negative
	Bovine	NSW	Mar	3	Negative
	Bovine	NSW	Apr	3	Negative
	Bovine	Vic	Apr	1	Negative
	Bovine	Vic	Jul	3	Negative
	Bovine	WA	Oct	3	Negative
	Bovine	WA	Nov	3	Negative
	Caprine	WA	Apr	3	Negative
	Cervine	SA	Jul	3	Negative
	Porcine	NSW	Mar	3	Negative
Hendra virus infection	Bat	WA	Jun	3	Negative
	Equine	ACT	Mar	3	Negative (2 unrelated investigations)
	Equine	ACT	Apr	3	Negative (2 unrelated investigations)
	Equine	NSW	Jan	3	Negative (5 unrelated investigations)
	Equine	NSW	Feb	2	Negative
	Equine	NSW	Feb	3	Negative (7 unrelated investigations)
	Equine	NSW	Mar	2	Negative (3 unrelated investigations)
	Equine	NSW	Mar	3	Negative (3 unrelated investigations)
	Equine	NSW	Apr	2	Negative (2 unrelated investigations)
	Equine	NSW	Apr	3	Negative (10 unrelated investigations)

Table A3.1 Investigations of suspect emergency animal diseases listed on Australia's National List of Notifiable Diseases, 2010 *(continued)*

Disease	Species	State	Month	Highest response level ^a	Finding
Hendra virus infection <i>(continued)</i>	Equine	NSW	May	3	Negative (10 unrelated investigations)
	Equine	NSW	Jun	3	Negative (8 unrelated investigations)
	Equine	NSW	Jul	3	Negative (6 unrelated investigations)
	Equine	NSW	Aug	3	Negative (8 unrelated investigations)
	Equine	NSW	Sep	3	Negative (9 unrelated investigations)
	Equine	NSW	Oct	2	Negative
	Equine	NSW	Oct	3	Negative
	Equine	NSW	Nov	2	Negative (4 unrelated investigations)
	Equine	NSW	Dec	2	Negative (4 unrelated investigations)
	Equine	NSW	Dec	3	Negative
	Equine	NT	May	2	Negative
	Equine	Qld	Jan	2	Negative (26 unrelated investigations)
	Equine	Qld	Feb	2	Negative (2 related investigations)
	Equine	Qld	Feb	2	Negative (35 unrelated investigations)
	Equine	Qld	Mar	2	Negative (38 unrelated investigations)
	Equine	Qld	Apr	2	Negative (29 unrelated investigations)
	Equine	Qld	May	2	Negative (2 related investigations)
	Equine	Qld	May	2	Negative (9 unrelated investigations)
	Equine	Qld	May	3	Negative (19 unrelated investigations)
	Equine	Qld	May	5	Negative
	Equine	Qld	May	5	Positive
	Equine	Qld	Jun	2	Negative (48 unrelated investigations)
	Equine	Qld	Jun	3	Negative (2 related investigations)
	Equine	Qld	Jun	3	Negative
	Equine	Qld	Jun	5	Negative
	Equine	Qld	Jul	2	Negative (54 unrelated investigations)
	Equine	Qld	Jul	3	Negative (2 unrelated investigations)
	Equine	Qld	Aug	2	Negative (2 related investigations)
	Equine	Qld	Aug	2	Negative (87 unrelated investigations)
	Equine	Qld	Sep	2	Negative (60 unrelated investigations)
	Equine	Qld	Oct	2	Negative (17 unrelated investigations)
	Equine	Qld	Nov	2	Negative (18 unrelated investigations)
	Equine	Qld	Dec	2	Negative (18 unrelated investigations)
	Equine	SA	May	3	Negative

Table A3.1 Investigations of suspect emergency animal diseases listed on Australia's National List of Notifiable Diseases, 2010 (continued)

Disease	Species	State	Month	Highest response level ^a	Finding
Hendra virus infection (continued)	Equine	SA	Jun	3	Negative (3 unrelated investigations)
	Equine	Vic	Mar	3	Negative (2 unrelated investigations)
	Equine	Vic	May	3	Negative (2 unrelated investigations)
	Equine	Vic	Jun	3	Negative (3 unrelated investigations)
	Equine	Vic	Jul	3	Negative
	Equine	Vic	Aug	3	Negative
	Equine	Vic	Sep	3	Negative
	Equine	WA	Feb	3	Negative
	Equine	WA	May	3	Negative
	Equine	WA	Aug	3	Negative
Infectious bursal disease – hypervirulent form and exotic antigenic variant forms	Chicken	SA	Sep	2	Negative
Porcine enterovirus encephalomyelitis (Teschen)	Porcine	WA	May	3	Negative
	Porcine	WA	Oct	3	Negative
	Porcine	WA	Dec	3	Negative
Porcine myocarditis (Bungowannah virus infection)	Porcine	NSW	Nov	2	Negative
Porcine reproductive and respiratory syndrome	Porcine	WA	Sep	3	Negative
Rabies	Canine	Qld	Oct	3	Negative
Sheep scab	Ovine	SA	Oct	2	Negative
Surra (<i>Trypanosoma evansi</i>)	Equine	NT	Aug	3	Negative
Swine influenza	Porcine	NSW	Mar	3	Negative
	Porcine	NSW	Apr	3	Negative
	Porcine	Vic	Sep	3	Positive ^e
Swine vesicular disease	Porcine	NSW	Mar	3	Negative
Transmissible gastroenteritis	Porcine	WA	Jan	3	Negative
	Porcine	WA	Feb	3	Negative
	Porcine	WA	Mar	3	Negative

Table A3.1 Investigations of suspect emergency animal diseases listed on Australia's National List of Notifiable Diseases, 2010 (continued)

Disease	Species	State	Month	Highest response level ^a	Finding
Varroasis (<i>Varroa destructor</i>)	Honey bee	Vic	Jan	2	Negative (2 unrelated investigations)
	Honey bee	Vic	Mar	2	Negative (2 unrelated investigations)
	Honey bee	Vic	Apr	2	Negative
	Honey bee	Vic	Jun	2	Negative (2 unrelated investigations)
	Honey bee	Vic	Sep	2	Negative
	Honey bee	Vic	Oct	2	Negative (3 unrelated investigations)
	Honey bee	Vic	Nov	2	Negative
	Honey bee	Vic	Dec	2	Negative (4 unrelated investigations)
Vesicular stomatitis	Bovine	NSW	Feb	3	Negative
	Bovine	NSW	Mar	3	Negative
	Bovine	NSW	Apr	3	Negative
	Equine	NSW	Mar	3	Negative
	Equine	NSW	Apr	3	Negative
	Equine	NSW	Aug	3	Negative
West Nile virus infection — clinical	Chicken	SA	May	3	Negative

NSW = New South Wales; NT = Northern Territory; Qld = Queensland; SA = South Australia; Tas = Tasmania; Vic = Victoria; WA = Western Australia

a Key to highest level of response:

- 1 Field investigation by government officer
- 2 Investigation by state or territory government veterinary laboratory
- 3 Specimens sent to the CSIRO Australian Animal Health Laboratory (or CSIRO Entomology)
- 4 Specimens sent to reference laboratories overseas
- 5 Regulatory action taken (quarantine or police)
- 6 Alert or standby
- 7 Eradication

b For additional negative monitoring data see the National Arbovirus Monitoring Program:

www.animalhealthaustralia.com.au/programs/adsp/namp/namp_home.cfm

c Positive for pandemic (H1N1) 2009 influenza virus





Department of Primary Industries Victoria

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APPENDIX 4 RESEARCH PROJECTS IN LIVESTOCK HEALTH



The tables below list some of the research projects in livestock health undertaken during 2010 by the Commonwealth Scientific and Industrial Research Organisation, the cooperative research centres, Australia's seven veterinary schools, and industry-based research and development corporations. Further information on research and development activities by these organisations is provided in Chapter 10.

Table A4.1 Commonwealth Scientific and Industrial Research Organisation Australian Animal Health Laboratory research projects

Project	Granting body/collaborator
Development of necrotic enteritis vaccines	Australian Poultry Cooperative Research Centre
Infectious bursal disease virus vaccines and surveillance	Rural Industries Research and Development Corporation
Development of a vaccine for bovine ephemeral fever	Pfizer
Development of a vaccine for Hendra virus	Australian Government Department of Agriculture, Fisheries and Forestry
Emerging infectious diseases: development of novel antiviral treatments for henipavirus infections	National Institutes of Health (United States)
Emerging infectious diseases: optimisation of novel henipavirus vaccines	National Institutes of Health (United States)
Control of sex-determination in poultry	Australian Poultry Cooperative Research Centre
Development of avian influenza-resistant poultry	Malta Advanced Technologies
Development and production of immunological reagents and tests for emerging infectious diseases using recombinant antibody technology	Commonwealth Scientific and Industrial Research Organisation, Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease
Improving diagnostic capability for henipavirus infections	Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease, National Institutes of Health (United States), Australian Government Department of Agriculture, Fisheries and Forestry
Development of molecular diagnostic test for rapid identification and differentiation of important poultry viruses (infectious bursal disease virus, Newcastle disease virus, avian influenza)	Rural Industries Research and Development Corporation
Evaluation of rapid molecular detection and characterisation systems for risk evaluation of unknown viruses isolated in Australia	Defence Science and Technology Organisation, Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease
Evaluation of pathogenesis of Ebola Reston virus	Commonwealth Scientific and Industrial Research Organisation
Emerging infectious diseases: SARS	Commonwealth Scientific and Industrial Research Organisation, Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease
Australian influenza viruses	Australian Government Department of Agriculture, Fisheries and Forestry, Food and Agriculture Organization of the United Nations, Australian Agency for International Development, National Health and Medical Research Council
Emerging bat viruses	Commonwealth Scientific and Industrial Research Organisation, National Health and Medical Research Council

Table A4.1 Commonwealth Scientific and Industrial Research Organisation Australian Animal Health Laboratory research projects (continued)

Project	Granting body/collaborator
Highly pathogenic avian influenza in ducks in Indonesia and Vietnam	Australian Centre for International Agricultural Research
Koi herpesvirus as a potential biological control agent	Invasive Animals Cooperative Research Centre
Characterisation of Hendra virus infection in the horse	Commonwealth Scientific and Industrial Research Organisation
Pathogenesis of highly pathogenic avian influenza	National Institutes of Health (United States)

Table A4.2 Cooperative Research Centre for an Internationally Competitive Pork Industry research projects

Project	Collaborative partners
Probiosis — a novel strategy for improved gut health and feed conversion efficiency in pigs without over-reliance on antibiotic growth promotants	Industry & Investment NSW
Manipulating the environment in the porcine large intestine to help control swine dysentery	Murdoch University, Department of Agriculture and Food WA, CHM Alliance
Development of a semi-quantitative real-time diagnostic assay for ileitis	Industry & Investment NSW
Improving health of neonatal piglets and weaners by injecting immunoglobulins	QAF Meat Industries, Australian Pork Farms Group, University of South Australia, Charles Sturt University, Australian Pork Limited
Bacteriophage to control enterotoxigenic <i>E. coli</i>	QAF Meat Industries, Australian Pork Farms Group, University of South Australia, Australian Pork Limited
Evaluating the replacement of zinc oxide with an encapsulated zinc oxide product as a means of controlling post-weaning diarrhoea in piglets	OzBio Pharms Pty Ltd

Table A4.3 Poultry Cooperative Research Centre research projects

Project	Research institute
Towards commercialisation of a next-generation ILTV vaccine and differential ELISA	University of Melbourne
Vaccine against <i>Clostridium perfringens</i> to protect birds from necrotic enteritis	Commonwealth Scientific and Industrial Research Organisation, Monash University
Vaccine strategies and interactions of attenuated coccidial vaccines	Bioproperties Pty Ltd
Evaluation of high resolution melt curve analysis for detection of multiple strains in a single specimen	University of Melbourne
Characterising population structure and diversity of Australian <i>Eimeria</i>	Department of Employment, Economic Development and Innovation Queensland — Primary Industries and Fisheries
Influence of betaine on embryo survival, hatchability and progeny performance	Feedworks
In ovo therapeutics to improve gut efficiency and health in the broiler chicken	University of Adelaide

Table A4.3 Poultry Cooperative Research Centre research projects (continued)

Project	Research institute
Posthatch feed restriction effects on broiler muscle growth	Ohio State University
Validation of qPCR assays targeting broiler performance	South Australian Research and Development Institute
Identification of microbial and gut-related factors driving bird performance	South Australian Research and Development Institute, University of New England, Commonwealth Scientific and Industrial Research Organisation, Ohio State University
Maximising spent litter fertiliser returns through nutrient and carbon management	Department of Employment, Economic Development and Innovation Queensland — Primary Industries and Fisheries
Phage-displayed peptides for controlling <i>Campylobacter jejuni</i> in poultry	Commonwealth Scientific and Industrial Research Organisation
In vivo evaluation in broilers of novel anti- <i>Campylobacter</i> compounds	Department of Employment, Economic Development and Innovation Queensland — Primary Industries and Fisheries
Small molecule inhibitors as anti- <i>Campylobacter jejuni</i> agents	Ohio State University
To improve the efficacy and safety of egg washing	South Australian Research and Development Institute
Eggshell quality and risks of food-borne pathogens	University of New England

Table A4.4 Cooperative Research Centre for Beef Genetic Technologies research projects

Project	Research institute
Genetic improvement of parasite resistance and thermoregulation	CRC for Beef Genetic Technologies through Commonwealth Scientific and Industrial Research Organisation; Animal Genetics and Breeding Unit (a joint venture between the University of New England and Industry & Investment NSW); Victorian Department of Primary Industries; United States Department of Agriculture — Agricultural Research Services
Novel solutions to improve tick resistance of cattle (development of a vaccine to control cattle ticks)	CRC for Beef Genetic Technologies through Department of Employment, Economic Development and Innovation (Queensland); Murdoch University; University of Queensland; United States Department of Agriculture — Agricultural Research Services
Objective measures of cattle welfare	CRC for Beef Genetic Technologies through Commonwealth Scientific and Industrial Research Organisation; Department of Employment, Economic Development and Innovation (Queensland); Victorian Department of Primary Industries; Meat & Livestock Australia

Table A4.4 Cooperative Research Centre for Beef Genetic Technologies research projects *(continued)*

Project	Research institute
Gene discovery for post-partum re-conception and age at puberty	CRC for Beef Genetic Technologies through Commonwealth Scientific and Industrial Research Organisation; Animal Genetics and Breeding Unit (a joint venture between the University of New England and Industry & Investment NSW); Department of Employment, Economic Development and Innovation (Queensland); Victorian Department of Primary Industries; United States Department of Agriculture – Agricultural Research Services; New Mexico State University USA; Meat & Livestock Australia
Male indicator traits to improve female reproductive performance	CRC for Beef Genetic Technologies through Department of Employment, Economic Development and Innovation (Queensland); Commonwealth Scientific and Industrial Research Organisation; Animal Genetics and Breeding Unit (a joint venture between the University of New England and Industry & Investment NSW); University of Queensland; Meat & Livestock Australia
Feeding and management strategies to increase dietary energy captured and reduce methane emissions from cattle	CRC for Beef Genetic Technologies through Commonwealth Scientific and Industrial Research Organisation; Department of Employment, Economic Development and Innovation (Queensland); Industry & Investment NSW; Ohio State University USA; Beef + Lamb New Zealand through its Pastoral Greenhouse Gas Consortium; Meat & Livestock Australia

Table A4.5 Cooperative Research Centre for Sheep Industry Innovation research projects

Project	Research institute
Commercialisation of the worm control program and supporting products for the summer rainfall region of eastern Australia	University of New England; Industry & Investment NSW; Department of Employment, Economic Development and Innovation, Queensland
Targeted treatment strategies for efficient sheep worm management	Department of Agriculture and Food Western Australia; South Australian Research and Development Institute
Parasite genetics — Information Nucleus flocks	South Australian Research and Development Institute; Department of Agriculture and Food Western Australia
WormBoss website	Department of Agriculture and Food Western Australia; Industry & Investment NSW; Department of Employment, Economic Development and Innovation, Queensland; University of New England; South Australian Research and Development Institute; University of Tasmania
FlyBoss website	Department of Agriculture and Food Western Australia; Industry & Investment NSW; Department of Employment, Economic Development and Innovation, Queensland; University of New England; South Australian Research and Development Institute; University of Tasmania
'Managing Flystrike' workshops for sheep producers	Department of Agriculture and Food Western Australia; Industry & Investment NSW; Department of Employment, Economic Development and Innovation, Queensland; University of New England; South Australian Research and Development Institute; University of Tasmania

Table A4.6 Faculty of Veterinary Science (University of Sydney) animal health research projects

Project	Granting body
Advanced breeding systems	Cooperative Research Centre for Innovative Dairy Products, Dairy Australia
Biomarker lifetime productivity	Cooperative Research Centre for Innovative Dairy Products, Dairy Australia
Development of genomic tools to predict the occurrence of osteochondrosis	Rural Industries Research and Development Corporation
Bovine Johne's disease — basic and applied research for improved diagnosis and prevention	Meat & Livestock Australia
Ovine Johne's disease — applications of basic research on enhanced diagnosis and prevention	Meat & Livestock Australia
Evaluation of the effectiveness of Gudair vaccination for the control of ovine Johne's disease in flocks vaccinating for at least 5 years	Meat & Livestock Australia
Eradicating footrot by specific vaccination	Australian Wool Innovation
Studies of the epidemiology and risk factors involved in the pathogenesis of acorn calf disease in Australia	Meat & Livestock Australia
Susceptibility of previously untested Basin fish species to epizootic haematopoietic necrosis (EHN) virus, and the epidemiology of EHN virus in the wild	Murray–Darling Basin Authority
Live bird market research	Australian Government Department of Agriculture, Fisheries and Forestry
Best practice health and husbandry of cattle, Cambodia	Australian Centre for International Agricultural Research
Best practice health and husbandry of cattle and buffalo in Lao People's Democratic Republic	Australian Centre for International Agricultural Research
Improving productivity and profitability of smallholder shrimp aquaculture and related agribusiness in Indonesia	Australian Centre for International Agricultural Research
Cost-effective biosecurity for nonindustrial commercial poultry operations in Indonesia	Australian Centre for International Agricultural Research
Physiological and nutritional approaches to alleviate heat stress in broiler chickens	Rural Industries Research and Development Corporation; Australian Chicken Meat Federation
Efficient, environment and bird-friendly commercial duck production	Rural Industries Research and Development Corporation
Sperm-sexing technologies in the pig industry — nonsurgical embryo transfer	Australian Research Council — Linkage Projects
Investigation into forage, feeding and milking options for future dairy farm systems in Australia	Dairy Australia Research and Development
Induction of oestrus in lactating sows	Cooperative Research Centre for an Internationally Competitive Pork Industry
Dairy protein evaluation tool: analysis of milk proteins and prediction of concentrations	Dairy Australia
Development of <i>Salmonella</i> inactivation treatment strategies for the livestock export industry	Meat & Livestock Australia

Table A4.6 Faculty of Veterinary Science (University of Sydney) animal health research projects
(continued)

Project	Granting body
Improving dairy production in Pakistan through improved extension services	Charles Sturt University shared research support
Australian calf scour pathogen survey	Schering–Plough
The effects of fatty acids on the performance and carcass characteristics of growing pigs	Cooperative Research Centre for an Internationally Competitive Pork Industry
The manipulation of growth and physiology in the young pig	Cooperative Research Centre for an Internationally Competitive Pork Industry
DNA adenine methylase mutants of <i>Salmonella</i> Typhimurium as modified live vaccines in calves	University of California — Santa Barbara shared research support
Non-invasive assessment of stress in commercial housing systems	Australian Egg Corporation Ltd, Egg Industry Research and Development Program
Development of <i>Mycoplasma bovis</i> molecular diagnostic tests and investigation of the incidence of <i>Mycoplasma</i> in eastern Australia dairy herds	Geoffrey Gardiner Dairy Foundation Ltd — Innovation Program
Control of nodaviral disease in tropical marine finfish hatcheries: enhanced biosecurity through the application of contemporary biotechnology, epidemiology and pathobiology	Australian Centre for International Agricultural Research — Research and Development Programs
Livestock movement and managing disease in eastern Indonesia and eastern Australia	Australian Centre for International Agricultural Research — Research and Development Programs
Postgraduate education in animal breeding management	Meat & Livestock Australia
Investigation of the role of bovine mammary stem cells in the lactation cycle of dairy cows	Dairy Australia — Research and Development Grants
Epidemiological investigations into the 2007 equine influenza outbreak	Rural Industries Research and Development Corporation — Research Support
Determining genetic correlates of feline infectious peritonitis (FIP) susceptibility	Winn Feline Foundation (USA)
Progression of changes in renal function in dogs recovering from acquired Fanconi-like syndrome	Provet NSW Pty Ltd
Sponsorship of the Koala Project — testing the efficacy of Metacam (meloxicam) in koalas	Boehringer Ingelheim Australia Pty Ltd
The role of pulpitis in the development of type II feline odontoclastic resorptive lesions	Morris Animal Foundation (USA)
Canine superficial pyoderma: should we be concerned about multidrug-resistant <i>Staphylococcus</i> species?	Canine Research Foundation
Characterisation of canine adipose derived mesenchymal stem cells for treatment of diseases and disorders in dogs	Canine Research Foundation
Protection against photoimmune suppression and skin cancer via oestrogen receptor signalling	Cancer Council New South Wales
The science of horse training: implications for rider safety and horse welfare	Rural Industries Research and Development Corporation
Topical and cryoanaesthesia for livestock husbandry	Australian Research Council — Linkage Projects

Table A4.6 Faculty of Veterinary Science (University of Sydney) animal health research projects
(continued)

Project	Granting body
Evaluation of the effectiveness of Gudair™ vaccination for the control of OJD in flocks vaccinating for at least 5 years	Meat & Livestock Australia
Linking habitat fragmentation and disease: the major histocompatibility complex class II and its role in disease of the koala (<i>Phascolarctos cinereus</i>)	Hermon Slade Foundation
The role of MHC in immune evasion: insights from a contagious cancer	National Health and Medical Research Council
Molecular selection tools for the Australian crocodile industry	Rural Industries Research and Development Corporation
Vitamin D in Australian lean meat	Meat & Livestock Australia Ltd
<i>Campylobacter jejuni</i> through the food chain: from range through processing	University of Arizona (USA)/Shared Research Support
Strategies to identify and develop bioactive peptides in meat and bone meal	Meat & Livestock Australia Ltd

Table A4.7 Faculty of Veterinary Science (University of Melbourne) animal health research projects

Project	Granting body
Optimisation and field testing of a practical vaccine against <i>Taenia solium</i> cysticercosis in pigs	Wellcome Trust
Pathogenesis of distal limb breakdown injuries in Thoroughbred racehorses	Rural Industries Research and Development Corporation
Pathophysiological mechanisms in equine osteochondrosis	Rural Industries Research and Development Corporation
PAR-1 is a key regulator of inflammation induced by the human pathogen, <i>Helicobacter pylori</i>	National Health and Medical Research Council
Mitogenomics of key pathogens — an international research co-operative	Australian Research Council
Infectious bronchitis virus (IBV) in Australian layer flocks: a focus on egg quality	Australian Egg Corporation Ltd
Wildlife disease surveillance in Victoria: identifying diseases in wildlife populations	Hermon Slade Foundation
Computational modelling of in vivo contact stresses in the equine fetlock joint	Rural Industries Research and Development Corporation
A comparative study of the performance of New Zealand Friesian cross Holstein–Friesian cows in Victorian dairy herds	Geoffrey Gardiner Dairy Foundation
The relationship between blood vessel remodelling and inflammatory cells in chronic asthma	National Health and Medical Research Council
In vitro optimisation of conditions for laryngeal reinnervation surgery	Rural Industries Research and Development Corporation
Comparison of programs for the control of blowfly-strike in Merino sheep in south-eastern Australia	Australian Wool Innovation Ltd

Table A4.7 Faculty of Veterinary Science (University of Melbourne) animal health research projects
(continued)

Project	Granting body
Structural and functional investigations into a novel chemokine binding protein encoded by evolutionarily diverse alphaherpesviruses	Australian Research Council
Investigations into a novel recombinant vaccine to control infectious laryngotracheitis	Poultry Cooperative Research Centre
Development of an attenuated vaccine to control the emerging bovine respiratory pathogen <i>Mycoplasma bovis</i>	Australian Research Council and Pfizer Australia Pty Ltd
Catchment sources of microorganisms: developing an integrated strategy for the sustained prevention of waterborne disease outbreaks in humans in Melbourne	Australian Research Council and Melbourne Water Corporation
Improving control of infectious laryngotracheitis virus in Australian broiler flocks	Rural Industries Research and Development Corporation
Poultry litter — an alternative fertiliser and method of increasing soil organic carbon	Rural Industries Research and Development Corporation
Contribution of cortical porosity to bone fragility	National Health and Medical Research Council
A rural training scheme — upscaling veterinary capability through dairy practice based research, knowledge transfer, and graduate training	Geoffrey Gardiner Dairy Foundation and Dairy Australia
The performance and survival of cows in Australian dairy herds	Dairy Australia
Insulin-like growth factor-1 in the plasma and semen of Holstein bulls and its relationship with breeding values	Australian Government Department of Agriculture, Fisheries and Forestry
Development of practical vaccines to break the life-cycles of the parasites causing cysticercosis and hydatid disease	National Health and Medical Research Council
Catchment sources of waterborne pathogens: ensuring safe drinking water	National Health and Medical Research Council
Investigation of the resilience of immune memory to manipulation by pathogens	Australian Research Council
Elucidating a key developmental switch in <i>Haemonchus contortus</i> using a massively parallel picolitre reactor sequencing-coupled genomic and bioinformatic platform	Australian Research Council
Avoiding the immune response — lessons from ‘simple’ bacteria	Australian Research Council
Mitogenomics using a massively parallel reactor platform — from barcoding to diagnostic tools for pathogens of major socioeconomic importance	Australian Research Council
Elucidating structure and function of activation-associated secreted proteins (ASPs) in blood-feeding hookworms — toward new methods of control	Australian Research Council
Finite element analysis modelling of third metacarpal bone in vivo stresses	Rural Industries Research and Development Corporation
Investigation into the aetiology of Australian stringhalt	Rural Industries Research and Development Corporation

Table A4.7 Faculty of Veterinary Science (University of Melbourne) animal health research projects
(continued)

Project	Granting body
Virus and horse specific risk factors for equine herpesvirus 1 (EHV-1) neurological disease	Rural Industries Research and Development Corporation
On-farm experiential learning for veterinary students	Australian Government Department of Agriculture, Fisheries and Forestry
Characterisation of avian nephritis virus (ANV) in commercial poultry	Rural Industries Research and Development Corporation
Evaluation of high resolution melt curve analysis for detection of multiple strains in a single specimen	Poultry Cooperative Research Centre
Bone repair in Thoroughbred racehorses: effects of training and rest	Rural Industries Research and Development Corporation
New and emerging herpesviruses in Australian marsupials	The Ian Potter Foundation
Improving control of colibacillosis using genomic information	Poultry Cooperative Research Centre
The discovery and validation of novel drug classes against parasites with potential for major economic impacts	National Health and Medical Research Council
Mucins in infection and inflammation	National Health and Medical Research Council
Optimising dairy cow health and welfare within flexible feeding systems	Department of Primary Industries Victoria

Table A4.8 School of Animal and Veterinary Sciences (Charles Sturt University) animal health research projects

Project	Granting body
Using faecal DNA as a diagnostic tool for plant poisoning in livestock	Charles Sturt University competitive grant
Diagnosis and control of small strongyle parasites of horses	Rural Industries Research and Development Corporation
Developing nanobody reagents to virulence factors from liver flukes	Charles Sturt University
Biomarkers, a diagnostic tool for <i>Staphylococcus aureus</i> mastitis in dairy cattle	Charles Sturt University competitive grant
The use of antibiotics in beef cattle	Graham Centre for Agricultural Innovation
Epidemiological skills of veterinarians in the field (survey)	Charles Sturt University
An evidence-based approach to enhancing insulin sensitivity in horses, through the use of dietary ingredients	WALTHAM Centre for Pet Nutrition, Mars United Kingdom Ltd
Safety evaluation of repeated doses of meloxicam in adult horses, Troy Laboratories Pty Ltd	Private funding, Troy Laboratories Pty Ltd
Safety evaluation of repeated doses of meloxicam formulation in foals	Private funding, Troy Laboratories Pty Ltd
Equine therapeutics and welfare	Rural Industries Research and Development Corporation

Table A4.8 School of Animal and Veterinary Sciences (Charles Sturt University) animal health research projects (continued)

Project	Granting body
Genetic basis for magnetic sensitivity in birds	Charles Sturt University
Improving dairy production in Pakistan through improved extension services	Australian Centre for International Agricultural Research
Mapping the distribution of <i>Echinococcus granulosus</i> infection in rural and semirural domestic dogs in southeastern Australia	Private funding
A fungal disease is killing Tasmanian platypuses and mainland frogs. Is there a connection?	Charles Sturt University
Improving feed-conversion efficiency and carcass composition in barrows	Cooperative Research Centre for an Internationally Competitive Pork Industry
Male factors and early pregnancy loss	Cooperative Research Centre for an Internationally Competitive Pork Industry
EverGraze	Cooperative Research Centre for Future Farm Industries
Oestrous synchronisation in mares	Rural Industries Research and Development Corporation
The role of parasites in the reproductive success of a long-lived colonial seabird, the crested tern	Morris Animal Foundation, Holsworth Wildlife Research Endowment
Defining an in vitro model system to investigate the pathogenesis of rye grass staggers in sheep	Charles Sturt University competitive grant
Liver fluke: improving disease control through understanding of parasite diversity, drug resistance and better diagnosis	Australian Research Council Linkage (partner: Virbac Australia)
Occurrence, prevalence and abundance of emerging zoonotic parasites in different species of flathead fish in NSW	Charles Sturt University
Risk assessment for parasites of endemic fresh water fish in Murray River Basin	Charles Sturt University
The role of kisspeptins during the transition period in mares	Rural Industries Research and Development Corporation
The development of a remote calf-alert device for use in northern Australia	Meat & Livestock Australia
Eggshell quality and risks of food borne pathogens	Australian Poultry Cooperative Research Centre
Identification and molecular characterisation of <i>Staphylococcus</i> strains in bovine mastitic milk in Australia	Charles Sturt University
<i>Ureaplasma diversum</i> in bull semen; detection and potential effects.	Graham Centre for Agricultural Innovation
Characterising <i>Ureaplasma diversum</i> , a potential pathogen of Australian cattle	Graham Centre for Agricultural Innovation
Pathogenesis of avian circovirus	Australian Research Council Discovery
Pathogens in migrating pigeons	Wildlife Exotic Disease Preparedness Program, Australian Government Department of Agriculture, Fisheries and Forestry
Parasites in terns	Holsworthy Trust

Table A4.9 School of Veterinary and Biomedical Sciences (Murdoch University) animal health research projects

Project	Granting body
Animal Welfare Objective Measures Research Program: qualitative behavioural assessment as an integrated measure of welfare	Meat & Livestock Australia
Pink-eye in feedlot sheep	Meat & Livestock Australia
Beef Cooperative Research Centre programs 1–6	Cooperative Research Centre for Beef Genetic Technologies
Development of a national surveillance system for classical swine fever, avian influenza and foot-and-mouth disease in Indonesia	Australian Centre for International Agricultural Research
Determining the impact of protozoan pathogens and strongyle worms on prime lamb production	Australian Research Council
Development of a rapid diagnostic test for avian influenza viruses in poultry outbreaks	Bill and Melinda Gates Foundation
Development of high-throughput diagnostic and genotyping techniques for understanding the impact of enteric bacterial infections on scouring in sheep	Australian Research Council
Enhancing the iron content of pork to promote human health benefits	Cooperative Research Centre for an Internationally Competitive Pork Industry
Genomic characterisation of novel circular DNA viruses in animals from Australia and New Guinea	Hermon Slade Foundation
Goat nutrient composition	Meat & Livestock Australia
Harmonising protocols for molecular and epidemiological surveillance of influenza viruses	Food and Agriculture Organization of the United Nations
Improving the biological efficiency and cost effectiveness of ractopamine	Cooperative Research Centre for an Internationally Competitive Pork Industry
Improving understanding of the epidemiology and means to control swine dysentery in Australia	Cooperative Research Centre for an Internationally Competitive Pork Industry
Interaction of <i>Cryptosporidium</i> lifecycle stages with aquatic biofilm communities	Australian Research Council
Management of pig associated zoonoses in Lao People's Democratic Republic	Australian Centre for International Agricultural Research
Mortality in live cattle exports	Meat & Livestock Australia
New technology for avian influenza surveillance	Bill and Melinda Gates Foundation
Quantifying feral pig abundance and efficacy of control strategies in southwest Western Australia	Water Corporation — Western Australia
Selection of feed wheat and (or) barley varieties for the Australian pig industry	Cooperative Research Centre for an Internationally Competitive Pork Industry
Strategies to reduce inanition in sheep: backgrounding and feedlotting strategies to address inanition in sheep	Meat & Livestock Australia
Subprograms: (3) Next generation meat quality, (3.3.1) Improvement of lean meat yield technical project, (3.8) Completion of meat science program	Cooperative Research Centre for Sheep Industry Innovation
Understanding factors affecting the iron content of pork	Australian Pork Ltd

Table A4.9 School of Veterinary and Biomedical Sciences (Murdoch University) animal health research projects *(continued)*

Project	Granting body
Immunonutrition: a novel concept to overcome gastrointestinal tract mucosal damage after weaning in pigs	Australian Research Council Linkage
Development of novel vaccines and diagnostic tests for swine dysentery	Spirogene Pty Ltd

Table A4.10 University of Queensland animal health research projects

Project	Granting body
Companion animal health	
Companion animal research in India	Bayer Healthcare AG
Narrowing the search for the genetic causes of deafness in the Australian stumpy-tail cattle dog	Canine Control Council, Qld Breeders Research Fund
Reducing numbers of unwanted feline companion animals in Australia	UQ Centre for Companion Animal Health
Investigation into the inheritance pattern and molecular genetic causes of atopy in West Highland white terriers	Australian Companion Animal Health Foundation
Comparison of key performance indicators between the insulins detemir and glargine in diabetic cats, and development of guidelines for home monitoring of blood glucose concentrations	Australian Companion Animal Health Foundation
Measurement of glycemic parameters and weight gain in clinically healthy dogs	Iams Company (USA)
Preliminary studies in age-related methylation in dogs	John & Mary Kibble Trust
Factors affecting insulin sensitivity and weight gain in healthy cats	Masterfoods/Waltham
Evaluation of the effect of animal assisted therapy on the quality of life of Alzheimer's disease patients in a residential care facility	The JO and JR Wicking Trust
Strategies to reduce euthanasia of unwanted companion animals	John & Mary Kibble Trust
The effect of diet on glucose and insulin concentrations in clinically healthy dogs	MasterFoods Australia New Zealand
Dog cognition research	Iams Company (USA)
Studies of diagnosis and treatment of obesity and diabetes in cats	Nippon Veterinary and Life Sciences University
Tick paralysis and the dog	Peter & Mary Ellen Stone Memorial Fund
Analysis of onset mechanism of obesity and diabetes in dogs and cats	Nippon Veterinary and Life Sciences University
Factors predicting relapse from diabetic remission in cats	Australian Companion Animal Health Foundation
Effectiveness of behavioural interventions to increase mucosal immune response in shelter cats	Morris Animal Foundation (USA)

Table A4.10 University of Queensland animal health research projects (continued)

Project	Granting body
Pilot study: to develop a methodology for measurement of bronchopulmonary function in normal dogs, and in dogs with naturally occurring chronic obstructive pulmonary disease (COPD)	John & Mary Kibble Trust, Peter & Mary Ellen Stone Memorial Fund
The unwanted cat population: characteristics, factors for entry and risk of euthanasia in Australian animal shelters	Petcare Information and Advisory Service
Colonization of the canine urinary tract with asymptomatic bacteriuria (ABU) strain <i>Escherichia coli</i> 8972 for the management of recurrent cystitis	Morris Animal Foundation (USA)
Is immune gene DQB1 duplicated in dogs?	John & Mary Kibble Trust
Molecular causes of haemangiosarcoma in dogs and development of diagnostic biomarkers	Australian Animal Cancer Foundation Limited
Development of guidelines for screening for feline diabetes using paw or ear samples and a portable blood glucose meter	Abbott Animal Health (USA)
Metabolic characteristics of diabetic remission in cats and predictors of relapse	Abbott Animal Health (USA)
Confirmation of the pathogenicity of a mutation in the canine <i>pkd1</i> orthologue associated with polycystic kidney disease in bull terriers, and development of a molecular genetic diagnostic test	Peter & Mary Ellen Stone Memorial Fund
Developing a molecular diagnostic test for polycystic kidney disease in bull terriers	Australian Companion Animal Health Foundation
Characterisation of the immunological response to <i>Blastocystis</i> spp. infection in dogs	The Trust Company: Sir Richard Williams Pathology grant
The animal's experience of grief — do companion animals grieve?	Morris Animal Foundation (USA)
Estimation of sensitivity and specificity of two feline immunodeficiency virus PCR assays	Fort Dodge Australia Pty Ltd
Education	
A feasibility study on the establishment of an education memorial program	Voiceless: the fund for animals
Equine health and performance	
Modulation of gap junction expression in healing equine tendon	Rural Industries Research and Development Corporation
Alfaxalone anaesthesia in horses: potential for improved safety for horses and handler	Rural Industries Research and Development Corporation
Investigation of the mechanism of insulin-induced laminitis in horses	Rural Industries Research and Development Corporation
Pasture management guidelines to minimise risk of laminitis in horses	Rural Industries Research and Development Corporation
Transcriptomics and proteomics of equine laminitis	University of Pennsylvania
Laminitis treatment by intraosseous delivery of drugs to the horse's foot	The Laminitis Trust
Improving the foot health of the domestic horse	Rural Industries Research and Development Corporation

Table A4.10 University of Queensland animal health research projects *(continued)*

Project	Granting body
Sacroiliac kinematics in horses	Rural Industries Research and Development Corporation
Serum complement activity during the developmental phase of equine laminitis	Morris Animal Foundation (USA)
Investigation into the effect of hyperthermia on the viability of tenocytes of the equine deep digital flexor tendon	The William Peter Richards Trust
Farm animal medicine and production	
Development of a topical treatment to replace surgical mulesing in sheep	Australian Research Council, Pfizer Animal Health
A blueprint for sustainable small holder pig production in central Vietnam	Hassall & Associates International
Early nutrition and the programming of body composition in cattle	Australian Research Council, University of South Australia
The epidemiology, pathogenesis and control of highly pathogenic avian influenza (HPAI) in ducks in Indonesia and Vietnam	Australian Centre for International Agricultural Research
Northern Australian beef fertility project 'Cash Cow'	Meat & Livestock Australia, Queensland Department of Primary Industries and Fisheries
Epidemiology and management of bovine respiratory disease in feedlot cattle	Queensland Department of Primary Industries and Fisheries
The influence of pre-weaning nutrition on age at puberty, scrotal circumference and semen quality	Ridley Agri-Products P/L
Changes in immune response and gene expression of tick resistant versus susceptible cattle	Beef Cooperative Research Centre Limited
Male indicator traits to improve female reproductive performance	Beef Cooperative Research Centre Limited
Studies on the epidemiology, pathogenesis and control of highly pathogenic avian influenza (H5N1) in ducks in Vietnam	Australian Biosecurity Cooperative Research Centre
Causes of variation in fertility of physically normal tropically adapted bulls	Meat & Livestock Australia
Factors affecting oocyte quality in tropically adapted cattle	Beef Cooperative Research Centre Limited
Causes of variation in fertility of physically normal tropically adapted bulls	Beef Cooperative Research Centre Limited
Diagnosis and control of diarrhoea in suckling pigs	Hassall & Associates International, AusAID
Improvements in cattle welfare	Beef Cooperative Research Centre Limited
Identification of constraints in village chicken production in Timor-Leste	Food and Agriculture Organization of the United Nations
Identification of gene markers associated with puberty in cattle	Beef Cooperative Research Centre Limited
A natural approach to prevent reproductive tract problems in free-range hens	Australian Poultry Cooperative Research Centre

Table A4.10 University of Queensland animal health research projects (continued)

Project	Granting body
An integrated genomics approach to improve our understanding of the biology of genital campylobacteriosis in beef cattle	Australian Research Council, Pfizer Australia, Gribbles Pathology, Queensland Department of Employment, Economic Development and Innovation, Murdoch University
<i>E. coli</i> cattle vaccine	Smart Futures National and International Research Alliances Program
Improvement and sustainability of sweet potato – pig production systems to support livelihoods in highland Papua and West Papua, Indonesia	South Australian Research and Development Institute
HIF-1 expression in blood leukocytes as a biomarker for bovine respiratory disease: response to variation in pathogenic stimuli, host factors and disease time-point	Sir Richard Williams Pathology grant
Optimisation of the expression of <i>Rhipicephalus (Boophilus) microplus</i> antigens in <i>Pichia pastoris</i> yeast	Jester Research Scholarship
In vitro culture of buffalo fly and infections with <i>Wolbachia</i>	Meat & Livestock Australia
Survey and risk assessment of non-encapsulated forms of <i>Trichinella</i> in mainland Australia	Australian Biosecurity Cooperative Research Centre
The maintenance of Newcastle disease master seed vaccine strains	Australian Centre for International Agricultural Research
Master seed of 1-2nd vaccine	Australian Centre for International Agricultural Research
Public health	
Of pets, vets and antimicrobials: fluoroquinolone use in dogs and resistance biology	Australian Research Council, Bayer
A simple, sensitive and rapid point of care test for diagnosis of Buruli ulcer disease	UBS Optimus Foundation
Wildlife	
An assessment of disease and environmental impact on the health of loggerhead and green turtles in Queensland, Australia	Australian Government Department of Sustainability, Environment, Water, Population and Communities
Humpback whales and the impact of noise: controlled exposure experiment	Australian Government Department of Sustainability, Environment, Water, Population and Communities – Australian Antarctic Division
The song and meta population structure of the humpback whales in the southern Pacific Ocean	Estate of Winifred Violet Scott
Acoustic determination of metapopulation structure of humpback whales in the western South Pacific region	Australian Government Department of Sustainability, Environment, Water, Population and Communities
Status and movement of spotted-tailed quolls throughout the Finders–Karawatha/Greenbank corridor, south-east Queensland	Australian Government Department of Defence
Humpback whale songs and population structure in the South Pacific	Sea World Research and Rescue Foundation
Profiling the hindgut bacteria of wild and captive dugong as an indicator of gut health	Sea World Research and Rescue Foundation
Koala disease research program – koala retrovirus (KoRV)	Australia Zoo Wildlife Warriors Worldwide Ltd

Table A4.10 University of Queensland animal health research projects *(continued)*

Project	Granting body
Further investigation into abundance estimates of migrating humpback whales in Australia: resolving unmodelled heterogeneity, estimating $g(0)$ and producing new abundance estimates for both populations	Australian Government Department of Sustainability, Environment, Water, Population and Communities — Australian Antarctic Division
Review of existing datasets to assess the spatial and temporal distribution of humpback whales within the Great Barrier Reef for identifying potential breeding/calving grounds	Australian Government Department of Sustainability, Environment, Water, Population and Communities — Australian Antarctic Division
Controlled exposure experiments to examine the effects of seismic airgun arrays on humpback whales — workshop and project preparation	E&P Sound and Marine Life Program
Veterinary health monitoring investigations of wild dugong populations: important screening tool for conservation management	Cybec Foundation scholarship
Ecology and conservation of the black mongoose, <i>Galerella nigrata</i> , and other animals of the Namibian rocky escarpments	Estate of Winifred Violet Scott — consumables scholarship
The contextual use of social sounds of migrating humpback whales, <i>Megaptera novaeangliae</i>	Estate of Winifred Violet Scott — consumables scholarship
Validating a new method of capillary blood collection and establishment of laboratory indices to assess health in wild dugong	The William Peter Richards Trust
Retroviral invasion of the koala genome: prevalence, transmission and role in immunosuppressive disease	Australian Research Council Linkage, Australia Zoo
Evaluation of WA Humpback surveys 1999, 2005, 2008: Where to from here?	Australian Government Department of Sustainability, Environment, Water, Population and Communities
Abundance estimates of the east Australian humpback whale population: 2010	Australian Government Department of Sustainability, Environment, Water, Population and Communities
Behavioural response study with Australian humpback whales and seismic airguns — Experiment #1 (Inshore Site, 2010)	E&P Sound and Marine Life
Laboratory animal research	
Investigation into the presence of vascular endothelial growth factor (VEGF) within rat spleen	The William Peter Richards Trust, Andrew Davis
Defining host-interactive molecules of the surface of pathogenic blood flukes	Group of Eight European Fellowship
Discovery of pathways to embryogenesis in pathogenic flatworm parasites using microdissection and transcriptomic technologies	Australian Research Council Discovery Projects

Table A4.11 School of Veterinary and Biomedical Sciences (James Cook University) animal health research projects

Project	Granting body
Molecular diagnosis of <i>Vibrio harveyi</i> in aquaculture	Australian Institute of Marine Science at James Cook University
Macrophage activation in the presence of <i>Burkholderia pseudomallei</i>	National Health and Medical Research Council, James Cook University
Clinical epidemiology of sago haemolytic disease	Ok Tedi Mining Limited
Biogeography and micro-ecology of <i>Burkholderia pseudomallei</i>	James Cook University
Growth and meat quality of grain-finished entire male <i>Bos indicus</i> cattle	Meat & Livestock Australia
Determination of disease-specific epitopes in rheumatic heart disease in Australia	National Health and Medical Research Council

Table A4.12 School of Animal and Veterinary Sciences (University of Adelaide) animal health research projects

Project	Granting body
Novel nutraceuticals to treat chemotherapy-induced mucositis and inflammatory bowel disease	Cancer Council Australia
New probiotics and animal extracts to treat intestinal mucositis	National Health and Medical Research Council
Emu oil and protection from intestinal disease	Rural Industries Research and Development Corporation
Nucleoforce: a yeast extract-based treatment modality for mucositis	Bioiberica Pty Ltd and Nidor Pty Ltd
BVD — economic impact, diagnosis and control	Department of Primary Industries and Resources South Australia, IDEXX Laboratories and Gribbles Veterinary Pathology
<i>Neospora caninum</i> in South Australian cattle	Department of Primary Industries and Resources South Australia and IDEXX Laboratories
<i>Besnoitia besnoiti</i> in South Australian cattle populations	AgriQuality
<i>Neospora caninum</i> in dairy buffalo in Pakistan	Higher Education Commission of Pakistan
In-ovo therapeutics to improve gut health and efficiency in broiler chickens	Poultry Cooperative Research Centre
Rumen health initiative based around subacute ruminal acidosis	School of Animal and Veterinary Sciences, University of Adelaide
Development of a slow-release intraruminal capsule for protection against mucosal hypersensitivity to helminths	

Table A4.13 Meat & Livestock Australia animal health research projects

Project	Research institute
Identification and validation of new drug targets for control of gastrointestinal nematode parasites of sheep	Australian Wool Innovation Management Agreement, The Australian National University, Commonwealth Scientific and Industrial Research Organisation, Victorian Department of Primary Industries
Studies of the epidemiology and risk factors involved in the pathogenesis of acorn calf disease in Australia	University of Sydney
Assessing the impact of fireweed on meat quality in Queensland	Queensland Department of Employment, Economic Development and Innovation
Impact of infectious diseases on beef cattle reproduction	Industry & Investment NSW
Parasite control in southern prime lamb production systems	Primary Industries and Resources SA
A coordinated approach to minimising the impact of annual ryegrass toxicity in agriculture	Western Australian Agricultural Authority
Economic impact of bovine ephemeral fever virus in extensive northern beef herds, phase 2	Penelope McGowan
RHD Boost — new calicivirus strains for potential release in Australia	Invasive Animals Cooperative Research Centre, Commonwealth Scientific and Industrial Research Organisation, Industry & Investment NSW
Development of an improved frozen substitute for chilled tick fever vaccine for cattle	Queensland Department of Employment, Economic Development and Innovation
Factors influencing the development of mucosal immunity in hand-reared calves	La Trobe University
Development and delivery of a new feral pig toxin/HOG-GONE®	Invasive Animals Ltd
Changes in within-flock prevalence of <i>Mycobacterium avium paratuberculosis</i> shedding following vaccination with Gudair™ in high and low-prevalence flocks	University of Sydney (Animal Health Australia and industry requested a 6-year extension of this project, approved in 2010)
Bluetongue — enhanced diagnostics for both virus and vectors	Industry & Investment NSW, Elizabeth Macarthur Agricultural Institute Menangle
Improvement of Australia's foot-and-mouth disease preparedness and response capability	Commonwealth Scientific and Industrial Research Organisation
Epidemiology and control of bovine Johne's disease in beef cattle herds	University of Melbourne, Australian Animal Health Council
Ovine strain of <i>Mycobacterium paratuberculosis</i> in beef cattle: a case study	Victorian Department of Primary Industries, Australian Animal Health Council
Field study to assess the efficacy of Silirum™ vaccine in two cattle herds infected with bovine Johne's disease	Pfizer Australia, Victorian Department of Primary Industries
Bovine Johne's disease — basic and applied research for improved diagnosis and prevention	University of Sydney, Australian Animal Health Council
Ovine strain of <i>Mycobacterium paratuberculosis</i> in beef cattle: a case study #2	Victorian Department of Primary Industries, Australian Animal Health Council
Evaluation of the effectiveness of Gudair™ vaccination for the control of ovine Johne's disease in flocks vaccinating for at least five years	University of Sydney, Australian Animal Health Council

Table A4.13 Meat & Livestock Australia animal health research projects (continued)

Project	Research institute
Ovine Johne's disease — applications of basic research on enhanced diagnosis and prevention	University of Sydney, Australian Animal Health Council
A re-evaluation of worm control and anthelmintic resistance on beef cattle properties in Western Australia	Western Australian Agricultural Authority
Anthelmintic resistance in nematode parasites of cattle in northern NSW	Veterinary Health Research
Fungal biopesticide for cattle tick control	Queensland Department of Employment, Economic Development and Innovation
In vitro culture of buffalo fly and infections with <i>Wolbachia</i>	University of Queensland; Queensland Department of Employment, Economic Development and Innovation
Molecular methods for detection of calf scour pathogens	University of Sydney
Selection of novel tick vaccine candidates using vaccination-challenge studies in cattle	Cooperative Research Centre for Beef Genetic Technologies; Queensland Department of Employment, Economic Development and Innovation

Table A4.14 Rural Industries Research and Development Corporation animal health research projects

Project	Research institute
The synchronisation of oestrus and ovulation in the mare	Charles Sturt University
The role of macrophages in recovery from exercise induced pulmonary haemorrhage	University of Melbourne
Alfaxalone anaesthesia in horses: potential for improved safety for horses	University of Queensland
Health and safety in Australian racing	Australian Racing New South Wales
Communication and information programs from the horse industry	Cox Inall Communications
<i>Clostridium difficile</i> -associated disease in horses	University of Western Australia
Modulation of gap junction expression in healing equine tendon	University of Queensland
Maternal metabolic status and the occurrence of osteochondritis dissecans in thoroughbred foals	University of Queensland
Investigation of the mechanism of insulin-induced laminitis in horses	University of Queensland
In vitro optimisation of conditions for laryngeal reinnervation surgery	University of Melbourne
Diagnosis of control of small strongyle parasites of horses	Charles Sturt University
Investigation into the aetiology of Australian stringhalt	University of Melbourne
Antimicrobial susceptibility patterns of bacterial isolates from horses	University of Sydney
Virus and horse specific risk factors for equine herpesvirus 1 neurological disease	University of Melbourne

Table A4.14 Rural Industries Research and Development Corporation animal health research projects (continued)

Project	Research institute
Oncotic and haemostatic effects of a modified fluid gelatin in normal horses	University of Sydney
Respiratory disease and biomarkers in the foal	University of Sydney
Epidemiological investigations into the 2007 equine influenza outbreak	University of Sydney
Computational modelling of in vivo contact stresses in the equine fetlock joint	University of Melbourne
Improving the foot health of the domestic horse	University of Queensland
Finite element analysis modelling of third metacarpal bone in vivo stresses	University of Melbourne
Pathophysiological mechanisms in equine osteochondrosis	University of Melbourne
Short term and future athletic performance of critically ill equine neonate	Axon Veterinary Services
Treatment of placentitis in thoroughbred mares: efficacy of altrenogest	Scone Veterinary Hospital
Determining reliable extraction rates for therapeutic drugs in horses	Queensland University of Technology
Pathogenesis of distal limb breakdown injuries in Thoroughbred racehorses	University of Melbourne
Intra-articular medication as risk factor for musculoskeletal injury	University of Melbourne
The science of horse training: implications for rider safety and horse welfare	University of Sydney
Trialling natural agents for control of darkling beetles	Queensland Department of Employment, Economic Development and Innovation
Investigation of inclusion body hepatitis outbreaks in Australian meat breeder/broiler flocks	University of Melbourne
Development of a process to enhance uptake of pearl millet	University of Queensland
Nutrient composition of chicken	University of New South Wales
Investigation of the prevalence of chlamydiosis in the Australian chicken meat industry	University of Melbourne
Use of bacteriophage and phage products to control <i>Campylobacter</i> in chicken	University of South Australia
Expansion and refinement of a molecular typing system for <i>Salmonella</i>	Institute of Medical and Veterinary Sciences
Pathogen survey of whole chicken carcasses and comparison to baseline	Food Sciences Australia
Physiological and nutritional approaches to alleviate heat stress	University of Sydney
Subunit vaccine against infectious bursal disease	Commonwealth Scientific and Industrial Research Organisation

Table A4.14 Rural Industries Research and Development Corporation animal health research projects (continued)

Project	Research institute
Evaluation of new high yielding triticale lines for broilers	University of Sydney
Accurate, real-time description of available energy in cereal grains	South Australian Research and Development Institute
Improving control of infectious laryngotracheitis in Australian broiler flocks	University of Melbourne
Life cycle assessment of the Australian meat chicken industry	FSA Consulting
Evaluation of NIR-based diet formulations for broiler chickens	South Australian Research and Development Institute
Characterisation of avian nephritis virus in commercial poultry	University of Melbourne
Rapid typing of <i>Pasteurella multocida</i>	Queensland Department of Employment, Economic Development and Innovation
Surveillance and pathotyping of circulating infectious bursal disease virus strains	Commonwealth Scientific and Industrial Research Organisation
An integrated typing service for the surveillance of <i>Salmonella</i> in chickens	Institute of Medical and Veterinary Sciences
Phage-displayed peptides for the real-time detection of <i>Campylobacter jejuni</i>	Commonwealth Scientific and Industrial Research Organisation
Development of a vaccine to control <i>Campylobacter</i> in chickens	University of South Australia
<i>Campylobacter</i> genotypes in chickens — national and regional influences	Queensland Department of Employment, Economic Development and Innovation
Biosecurity/food safety training DVDs for the poultry meat industry	Bannister Technical Pty Ltd
Avian influenza in wild birds surveillance Moreton Bay	Queensland Department of Employment, Economic Development and Innovation
Avian influenza — improved diagnostics for detecting antibodies to H5N1	Commonwealth Scientific and Industrial Research Organisation
The biosecurity of mass poultry mortality composting	Department of Primary Industries, Victoria
Artificial olfaction system for on-site odour measurement	Queensland Department of Employment, Economic Development and Innovation
Evaluating food-borne pathogens associated with partial and full litter re-use	Queensland Department of Employment, Economic Development and Innovation
Poultry litter: alternative fertiliser and ways to increase soil organic carbon	University of Melbourne
Review of fan efficiency for meat chicken sheds	Queensland Department of Employment, Economic Development and Innovation
Free-range chicken farms — odour emissions and nutrient management	Queensland Department of Employment, Economic Development and Innovation
Cost-benefit analysis of the effects of <i>Apis cerana</i>	Terry Ryan
Future surveillance needs for bee biosecurity	Commonwealth Scientific and Industrial Research Organisation

Table A4.14 Rural Industries Research and Development Corporation animal health research projects (continued)

Project	Research institute
Pollination aware: its importance to Australia	Strategen Environmental Consultants Pty Ltd
Small hive beetle biology providing control options	Industry & Investment NSW
A study of <i>Nosema ceranae</i> in Australia	Industry & Investment NSW
Genetic variation of <i>Varroa jacobsoni</i> and pathology of microbial pathogens	Commonwealth Scientific and Industrial Research Organisation
In-hive fungal bio-control of small hive beetle	Queensland Department of Employment, Economic Development and Innovation
Commercialisation of the small hive beetle harbourage device	Industry & Investment NSW
Preparing for <i>Varroa</i> : how susceptible are Australian honey bee stocks?	University of Sydney
Testing pollen substitutes that meet the nutritional needs of honeybees	Department of Agriculture and Food Western Australia
Efficient environment and bird friendly commercial duck production	University of Sydney
Linkage mapping and QTL analysis in saltwater crocodiles	University of Sydney
Captive breeding of hawksbill turtles	Wildlife Management International Pty Ltd
Tracking crocodile skin defects — from farm to product	Wildlife Management International Pty Ltd
Enhancing productivity improvements in the Australian water buffalo industry	Northern Territory Department of Regional Development, Primary Industry, Fisheries and Resources
Dairy buffalo upgrading research project	Victorian Buffalo Industry Council
Deer velvet antler — research quality and returns through the pools	Deer Industry Association of Australia
Improving the welfare and humaneness of commercially harvested kangaroos	Industry & Investment NSW
Advancing artificial insemination in camelids, particularly the alpaca	University of Sydney
Re-invigorating NSW prawn farms through the culture of the mulloway	National Marine Science Centre
Redclaw selective breeding program	Queensland Crayfish Farmers Association Inc
Selective breeding programs for game bird and ratite farming	University of Western Australia
Optimising genetics, reproduction and nutrition of dairy sheep and goats	Monash University
Improving the production efficiency, welfare and processing of commercial ducks	University of Sydney
Viral and endogenous retroviral detection and characterisation in crocodiles	Northern Territory Department of Regional Development, Primary Industry, Fisheries and Resources

Table A4.15 Dairy Australia research projects

Project	Research institute
Animal diseases	
<i>InCalf</i> , a national extension program for herd reproductive performance	Dairy Australia, Harris Park
An investigation into methods of predicting ovulation in cattle	University of Queensland
Understanding milk acetone cycling in dairy cattle	University of Sydney
Countdown Downunder: Making it happen on farm	Dairy Australia, Harris Park
BJD Aware, a Johne's disease communications program	Dairy Australia
Application of herd tests for Johne's disease	Department of Primary Industries Victoria
Assessment of calf rearing strategies for Johne's disease control	Department of Primary Industries Victoria
Calf health and diseases	University of Melbourne
National Program to Eradicate EBL from the Australian Dairy Herd	Australian Dairy Industry Council, Dairy Processors, Australian Dairy Farmers, Australian Government Department of Agriculture, Fisheries and Forestry, state animal health authorities, Dairy Australia
Response to emergency animal diseases	Dairy Australia, NE Tweddle
Biosecurity management on dairy farms	Dairy Australia, JA Craven
Animal health, lameness and calf rearing extension days	Regional dairy programs (several)
Acidosis and lameness links	Strategic Bovine Services
Genetic improvement	
Australian Dairy Herd Improvement Scheme	Australian Dairy Herd Improvement Scheme
Farmer decision making for the selection of genetics in Australian dairy herds	University of Melbourne
Dairy Futures Cooperative Research Centre	CRC, Department of Primary Industries Victoria, LaTrobe University, University of Sydney, Monash University, University of Melbourne, Commonwealth Scientific and Industrial Research Organisation, Australian Dairy Herd Improvement Scheme
Dairy nutrition	
Future Forages	Dairy Australia
30:30 Feedbase Project	University of Melbourne
20:12 Feedbase Project	Tasmanian Institute of Agricultural Research
Forage Plu\$	Queensland Department of Primary Industries and Fisheries
Pasture Plu\$	Tasmanian Department of Primary Industries and Water
Greener Pastures	Agriculture WA
South East Forage Innovation	Dairy SA (Regional Dairy Program)
Future Dairy, addressing future resource limitations through innovation in forages and automation	University of Sydney

Table A4.15 Dairy Australia research projects (continued)

Project	Research institute
Flexible Intensive Feeding Systems	Dairy Australia
The Cool Cows Project	Dairy Australia
Feed2Milk: managing the risks associated with grain/concentrate and fodder purchases	Department of Primary Industries Victoria
TASMILK 60 Grains2Milk Project	Tasmanian Institute of Agricultural Research
Drought coordination	Regional Dairy Programs (several)
Focus Farms — improving environment and enterprise management	Gipps Dairy, West Vic and Dairy SA (regional dairy programs)
Feed budgeting and grain buying workshops	Western Dairy (regional dairy program)
Animal handling and husbandry practices	
Dairy Welfare We Care, an animal welfare communications program	Dairy Australia
Disbudding extension	Dairy Australia
Lameness training and prevention	Dairy Australia
Alternatives to tail docking	Dairy Australia
Dairy calf supply chain trial	Dairy Australia
Enhanced calf management systems	Dairy Australia
Competencies for calf husbandry	J McNeil
Calf transport and time-off-feed trial	University of Melbourne
National Centre of Dairy Education Australia	National Centre of Dairy Education Australia
Management of downer cows	University of Melbourne
Victorian Dairy Extension Centre	Department of Primary Industries Victoria
Dairy Pathways — NSW Extension Service	New South Wales Department of Primary Industries

Table A4.16 Fisheries Research and Development Corporation (Aquatic Animal Health Subprogram) animal health research projects

Project	Research institute
Investigating and managing the <i>Perkinsus</i> -related mortality of blacklip abalone in NSW Phase 1	Industry & Investment NSW
Development of molecular diagnostic procedures for the detection and identification of herpes-like virus of abalone (<i>Haliotis</i> spp.)	Commonwealth Scientific and Industrial Research Organisation — Livestock Industries, Victorian Department of Primary Industries
Metazoan parasite survey of selected macro-inshore fish of southeastern Australia, including species of commercial interest	University of Adelaide, James Cook University
Rapid strain identification of the bacterial fish pathogen <i>Streptococcus iniae</i> and development of an effective polyvalent vaccine for Australian barramundi	University of Queensland
Development of a DNA microarray to identify markers of disease in pearl oysters (<i>Pinctada maxima</i>) and to assess overall oyster health	Department of Fisheries, Western Australia; Macquarie University

Table A4.16 Fisheries Research and Development Corporation (Aquatic Animal Health Subprogram) animal health research projects *(continued)*

Project	Research institute
Investigation of Chlamydiales-like organisms in pearl oysters, <i>Pinctada maxima</i>	Department of Fisheries, Western Australia
Strategic planning, project management and adoption	Commonwealth Scientific and Industrial Research Organisation — Livestock Industries
Tools for investigation of the nodavirus carrier state in marine, euryhaline and freshwater fish and control of nervous necrosis virus through integrated management	University of Sydney
Intensive pathology training workshop for laboratory diagnosticians	Elizabeth Macarthur Agricultural Institute, Industry & Investment NSW
Aquatic Animal Health Technical Forum	Commonwealth Scientific and Industrial Research Organisation — Livestock Industries
Characterisation of abalone herpes-like virus infections in abalone	Commonwealth Scientific and Industrial Research Organisation — Livestock Industries, Victorian Department of Primary Industries, South Australian Research and Development Institute
Surveys of ornamental fish for pathogens of quarantine significance	University of Sydney
Determining the susceptibility of remnant populations of abalone previously exposed to abalone viral ganglioneuritis	Victorian Abalone Divers Association
Investigation of an emerging bacterial disease in wild Queensland gropers, marine fish and stingrays with production of diagnostic and epidemiological tools to reduce the spread of disease to other states in Australia	Queensland Department of Employment, Economic Development and Innovation
Improved fish health management for integrated inland aquaculture through Better Management Practices (BMPs)	Victorian Department of Primary Industries

Table A4.17 Australian Wool Innovation Ltd research projects

Project	Research institute
Comparison of programs for the control of blowfly-strike in Merino sheep in south-eastern Australia	University of Melbourne
Reliable establishment of non-traditional perennial pasture species	Future Farm Industries Cooperative Research Centre
Lice detection test — development of a commercial product II	Industry & Investment NSW
Fungal biopesticide for lice control	Queensland Department of Employment, Economic Development and Innovation
Wool Carbon Alliance	
Commercialisation of alternative to mulesing technologies — clips 2007	Private company
Eradication of virulent ovine footrot by sequential specific vaccination	University of Sydney
North Tuppal Station Re-Enactment Demonstration 4–5 June 2010	Private company

Table A4.17 Australian Wool Innovation Ltd research projects *(continued)*

Project	Research institute
Genetics and production systems	Cooperative Research Centre for Sheep Industry Innovation
Shearer and wool handler training — Queensland training delivery 2009–10	Queensland Rural Industry Training Council
Staple strength breeding trial	Commercial
Scholarship and studentship program	Charles Sturt University; University of Melbourne; University of Queensland; University of Adelaide; University of Sydney; University of Technology, Sydney
AANRO Database 2007–2010	
Wild Dog Management Committee	
Validation of breech flystrike prevention economic model	Commercial
Logistic review to use radio-frequency identification to track bales through the pipeline	Commercial
Sample storage DNA extraction and distribution services	Australian Genome Research Facility
Meta-analysis — Australian Veterinary Association Conference, 24–28 May 2010	Commercial
Rabbit Management Advisory Group	
Kondinin Group Farming Ahead 2009–10	
Facilitating strategic management of wild dogs	Invasive Animals Cooperative Research Centre
Strategic approach to integrated wild canid management for agricultural benefit	Invasive Animals Cooperative Research Centre
Lethal trap device	Invasive Animals Cooperative Research Centre
Aerial baiting for wild dogs	Industry & Investment NSW
Wild dog extension	Queensland Department of Employment, Economic Development and Innovation; Department of Agriculture and Food Western Australia; Livestock Health and Pest Authorities New South Wales; South Australian Arid Lands Board; Department of Primary Industries Victoria
Impact of bacteria and coccidia on scouring and productivity in sheep	Murdoch University
Towards commercialisation of an environmentally friendly insecticide	Commonwealth Scientific and Industrial Research Organisation
Pastures Australia	Meat & Livestock Australia, Rural Industries Research and Development Corporation
Breeding for breech strike resistance	Department of Agriculture and Food Western Australia
Evergraze	Future Farm Industries Cooperative Research Centre
2007 PhD scholarship — Sustainable production systems — Annemieke van der Meulen	University of New England
Sheep genetics — MerinoSelect	Meat & Livestock Australia, commercial
Commercialisation of sheep breeding technologies 2008–10	Commercial

Table A4.17 Australian Wool Innovation Ltd research projects *(continued)*

Project	Research institute
On-farm independent review of research publications/ outputs	Commercial
Wool production forecasting 2009–10	
Shearer and wool handler training — NSW Training Delivery 2009–10	TAFE NSW
Shearer and wool handler training — WA Training Delivery 2009–10	Training WA
Shearer and wool handler training — VIC Training Delivery 2009–10	Primary Skills, Shearing Contractors Association of Australia Shearer, Wool Handler Training Inc
Shearer and wool handler training — SA Training Delivery 2009–10	TAFE SA
Shearer and wool handler training — TAS Training Delivery 2009–10	Primary Employers Tasmania
Biocontrol of Patersons curse	Industry & Investment NSW
Optimising the growth of sulla on neutral to mildly acidic coarse textured soils	Department of Agriculture and Food Western Australia
National Mulesing Assurance Program (NMAP) 2009–10	Private company
Wool production forecasting 2010–11	
Sheep Welfare Forum 17 August 2009	
National RD&E Strategy budget and staffing	Department of Agriculture and Food Western Australia
Shearer and wool handler training — resource development 2009–10	Private company
Strategic advice to the wool industry on implementation of Australia's carbon pollution reduction scheme	Australian Farm Institute
The Sheep's Back 2007–2010 (WA extension program)	Private company
Australian Veterinary Association and genetic panel audits	
Cobbett Intradermal Phase 2	Private company
Breech Flystrike R&D Update	
Nonsteroidal anti-inflammatory drugs for sheep — analgesia for painful husbandry procedures	Private company
Leading Sheep 2008–2011 (Qld extension program)	Queensland Department of Employment, Economic Development and Innovation
Bestprac 2007–2010 (pastoral extension program)	Private company
2008 Australian Rural Leadership Program (Course 16)	Australian Rural Leadership Foundation
Australian Merino Sire Evaluation Association (AMSEA) 2008–11	Australian Merino Sire Evaluation Society
Merino Consultation Group (MCG) 2007 to June 2010	
Leader Products 'Anti-Flystrike Clips' Training Program 2010 — Livestock Contractors Association	Private company
Think Profit	Private company

Table A4.17 Australian Wool Innovation Ltd research projects *(continued)*

Project	Research institute
Shearer and wool handler training – NSW training delivery 2010–11	TAFE NSW
Shearer and wool handler training – WA training delivery 2010–11	Training WA
Shearer and wool handler training – VIC training delivery 2010–11	Primary Skills, Shearing Contractors Association of Australia, Shearer Wool Handler Training Inc
Shearer and wool handler training – SA training delivery 2010–11	TAFE SA
Shearer and wool handler training – QLD training delivery 2010–11	Queensland Rural Industry Training Council
Shearer and wool handler training – TAS training delivery 2010–11	Primary Employers Tasmania
Shearer and wool handler training – resource distribution 2010–11	Private company
Sheepconnect SA 2008–2011 (SA extension program)	Private company
Increased weaner survival	Cooperative Research Centre for Sheep Industry Innovation
Bestwool/Bestlamb 2008–2011 (VIC extension program)	Department of Primary Industries Victoria
Methane mitigation	Commonwealth Scientific and Industrial Research Organisation, Meat & Livestock Australia
Commercialisation of Lotus cultivars and development of accompanying knowledge for their on-farm use and management	Future Farm Industries Cooperative Research Centre
PhD Scholarship – EverGraze – Felicity Cox	Charles Sturt University
RHD Boost – Rabbit bio-control	Invasive Animals Cooperative Research Centre
Decision rules for targeted treatment	Cooperative Research Centre for Sheep Industry Innovation
Information support for parasite management	Cooperative Research Centre for Sheep Industry Innovation
Sheep Connect Tasmania 2009–2012	Tasmanian Institute of Agricultural Research
National Bestprac Program 2011–2013 (pastoral extension program)	Private company
Sheep Connect 2008–2011 (NSW extension program)	Industry & Investment NSW
Making More from Sheep Phase 2 (2010–2013)	Meat & Livestock Australia
Investing in Youth: undergraduate studentships	Rural Industries Research and Development Corporation
Nuffield Farming Scholarships 2011–13	Nuffield
Sheep Industry Innovation, Program 4 – Information Nucleus	Cooperative Research Centre for Sheep Industry Innovation
Adoption and impact	Cooperative Research Centre for Sheep Industry Innovation
Reproduction efficiency	Cooperative Research Centre for Sheep Industry Innovation

Table A4.17 Australian Wool Innovation Ltd research projects *(continued)*

Project	Research institute
Greenhouse gas abatement	Cooperative Research Centre for Sheep Industry Innovation
Postgraduate training — CRC for Sheep Industry Innovation	Cooperative Research Centre for Sheep Industry Innovation
Climate change strategy for primary industries	Climate Change Research Strategy for Primary Industries
Calm Shear Animal (Sheep) Restraint	University of Adelaide
Alternatives to mulesing: market research on attitudes and practice change in Australian producers	Department of Agriculture and Food Western Australia
Keeping productive older ewes	Industry & Investment NSW
Breeding leadership	Private company
Opportunities for wool producers to participate in a carbon economy — product benchmarking and carbon credentials	Commonwealth Scientific and Industrial Research Organisation
Communicating practical management strategies for future climate scenarios to southern Australian sheep producers	Meat & Livestock Australia; Department of Agriculture and Food Western Australia; Primary Industry and Resources SA; Department of Primary Industries Victoria; Industry & Investment NSW; Tasmanian Department of Primary Industries, Parks, Water and Environment





Department of Primary Industries Victoria

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APPENDIX 5 KEY AUSTRALIAN ANIMAL HEALTH WEBSITES



Accreditation Program for Australian Veterinarians	www.animalhealthaustralia.com.au/training/apav.cfm
Animal Health Australia	www.animalhealthaustralia.com.au
Animal Health Laboratory Network	www.daff.gov.au/animal-plant-health/animal/system/lab-network
<i>Animal Health Surveillance Quarterly</i>	www.animalhealthaustralia.com.au/status/ahsq.cfm
AQUAPLAN	www.daff.gov.au/animal-plant-health/aquatic/aquaplan
AQUAVETPLAN	www.daff.gov.au/animal-plant-health/aquatic/aquavetplan
AUS-MEAT	www.ausmeat.com.au
Australasian Veterinary Boards Council	www.avbc.asn.au
Australian Alpaca Association	www.alpaca.asn.au
Australian Biosecurity Cooperative Research Centre for Emerging Infectious Disease	www.abcrc.org.au
Australian Centre for International Agricultural Research	www.aciar.gov.au
Australian Chicken Meat Federation	www.chicken.org.au
Australian Dairy Farmers	www.australiandairyfarmers.com.au
Australian Egg Corporation	www.aecl.org
Australian Food and Grocery Council	www.afgc.org.au
Australian Government Department of Agriculture, Fisheries and Forestry	www.daff.gov.au
Australian Government Department of Health and Ageing	www.health.gov.au
Australian Harness Racing	www.harness.org.au
Australian Honey Bee Industry Council	www.honeybee.org.au
Australian Horse Industry Council	www.horsecouncil.org.au
Australian Livestock Export Coop (LiveCorp)	www.livecorp.com.au
Australian Lot Feeders' Association	www.feedlots.com.au
Australian National Quality Assurance Program	www.anqap.com
Australian Overseas Aid Program, AusAID	www.usaid.gov.au
Australian Poultry Cooperative Research Centre	www.poultrycrc.com.au
Australian Q Fever Register	www.qfever.org
Australian Quarantine and Inspection Service	www.daff.gov.au/aqis
Australian Racing Board	www.australianracingboard.com.au
Australian Veterinary Association	www.ava.com.au
Australian Wildlife Health Network	www.wildlifehealth.org.au/AWHN/home.aspx
Australian Wool Innovation	www.wool.com.au
Biosecurity Australia	www.daff.gov.au/ba
Cattle Council of Australia	www.cattlecouncil.com.au
Cooperative Research Centre for an Internationally Competitive Pork Industry	www.porkcrc.com.au
Cooperative Research Centre for Beef Genetic Technologies	www.beefcrc.org.au
Cooperative Research Centre for Sheep Industry Innovation	www.sheepcrc.org.au

CSIRO Australian Animal Health Laboratory	www.csiro.au/places/aahl.html
CSIRO Livestock Industries	www.csiro.au/li
Dairy Australia	www.dairyaustralia.com.au
Deer Industry Association	www.diaa.org
Department of Agriculture and Food, WA	www.agric.wa.gov.au
Department of Fisheries, WA	www.fish.wa.gov.au
Department of Primary Industries, Vic	www.dpi.vic.gov.au
Department of Primary Industries and Fisheries, Qld	www.dpi.qld.gov.au
Department of Primary Industries, Parks, Water and Environment, Tas	www.dpiw.tas.gov.au
Department of Resources, NT	www.nt.gov.au/d
Faculty of Veterinary Science, University of Melbourne	www.vet.unimelb.edu.au
Faculty of Veterinary Science, University of Sydney	www.sydney.edu.au/vetscience
Farm Biosecurity	www.farmbiosecurity.com.au
Fisheries Research and Development Corporation, Aquatic Animal Health	www.frdc.com.au/research/Animal-Health
Food Standards Australia New Zealand	www.foodstandards.gov.au
Industry & Investment NSW (Primary Industries)	www.dpi.nsw.gov.au
Meat & Livestock Australia	www.mla.com.au
National Animal Health Information System	nahis.animalhealthaustralia.com.au
National Animal Health Performance Standards	www.animalhealthaustralia.com.au/programs/ahsp/perf_stds.cfm
National Farmers' Federation	www.nff.org.au
National Notifiable Diseases Surveillance System	www.health.gov.au/internet/main/publishing.nsf/Content/cda-surveil-nndss-nndssintro.htm
National Pests & Disease Outbreaks	www.outbreak.gov.au
National Transmissible Spongiform Encephalopathy Surveillance Program	www.animalhealthaustralia.com.au/aahc/programs/adsp/tsefap/tse_ntsesp.cfm
Office of the Chief Veterinary Officer	www.daff.gov.au/animal-plant-health/animal
Primary Industries and Resources SA	www.pir.sa.gov.au
Primary Industries Ministerial Council	www.mincos.gov.au
Rural Industries Research and Development Corporation	www.rirdc.gov.au
SAFEMEAT	www.safemeat.com.au
School of Animal and Veterinary Sciences, Charles Sturt University	www.csu.edu.au/faculty/science/savs
School of Veterinary and Biomedical Sciences, James Cook University	www.jcu.edu.au/vbms
School of Veterinary and Biomedical Sciences, Murdoch University	www.vetbiomed.murdoch.edu.au
Seafood Services Australia	www.seafoodservices.com.au/



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