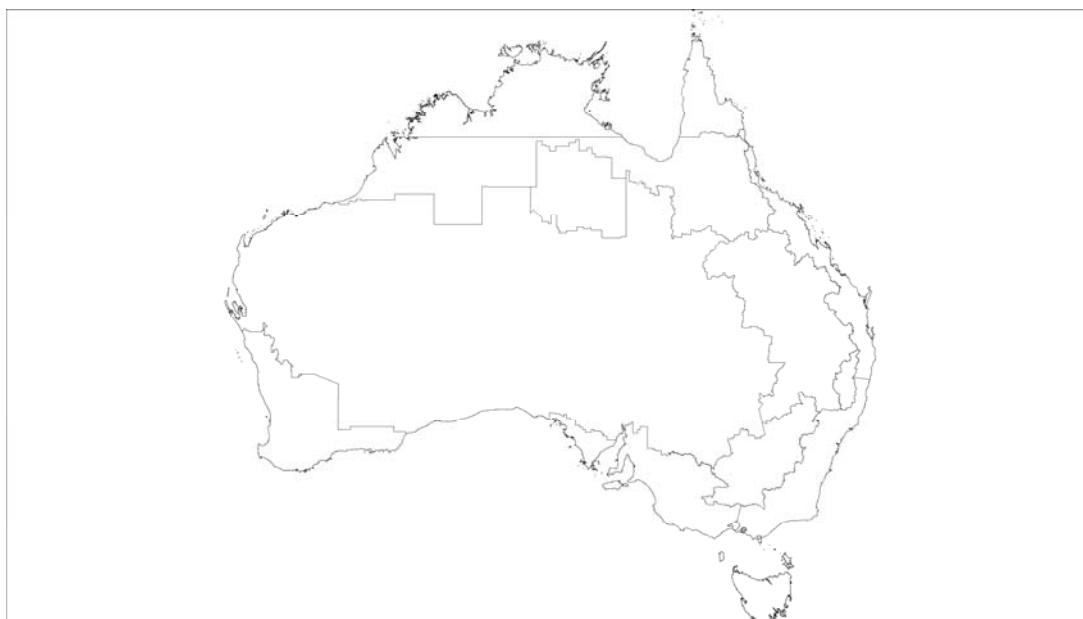

LIVESTOCK MOVEMENT IN AUSTRALIA AND EMERGENCY DISEASE PREPAREDNESS

The Office of the Chief Veterinary Officer (OCVO) within the Australian Government Department of Agriculture, Fisheries and Forestry has the responsibility for coordinating national emergency animal disease preparedness and responses. Management of infectious animal diseases may be complicated by the regular movement of livestock throughout Australia because this movement offers the potential for rapid spread of infectious disease. Successful planning for and management of infectious disease relies on good understanding of ‘normal movement patterns’, the rapid identification and tracing of animal movements from infected premises and the prevention of further animal or animal product movement capable of spreading disease.

The Australian Government’s “Securing the Future” initiative was used to fund the DAFF project “Emergency Animal Disease/Emerging Disease Awareness” designed to collect information on contemporary management practices including buying and selling patterns in a range of Australian animal industries. As part of this initiative, OCVO commissioned a series of studies which provide qualitative information about the structure, animal husbandry practices and livestock movements of five livestock industries — sheep, pigs, beef cattle, dairy and commercial poultry — and the saleyard industry. To facilitate the study of the structure and dynamics of the livestock industries, Australia was divided into 12 regions in which industry practices and movement patterns were similar (see map below). These regions are based on aggregations of the 33 survey areas used by the Australian Bureau of Agricultural and Resource Economics (ABARE) for their sheep and cattle surveys.



Map of aggregated ABARE regions

National farm surveys are conducted annually by ABARE, which maps this data using Statistical Divisions (SDs) as the basis for presentation. Statistical Divisions are intended to be relatively homogeneous areas within which there are identifiable social and economic links among populations. The maps presented at the Statistical Division level present indicators derived from ABARE data that are obtained by sample rather than census.

The information provided by the commissioned reports can be used in a range of applications but is particularly important for understanding and managing potential infectious animal diseases. A ‘snapshot’ of the findings of each of the studies is provided here. Links to the full reports are also provided.

SNAPSHOT 1 Structure and Dynamics of Australia’s Sheep Population

The full study identifies and maps geographic regions and production sectors across Australia and documents movements of sheep within and between regions. The study reports sheep movements in terms of the number and size of consignments, the season of movement, the type of source or destination (saleyard, abattoir, live export etc) and the destination/source regions from/to for “typical” farms in each region.

The national sheep flock was estimated in 2006 at 104 million, with two thirds of these sheep located in Regions 9, 10b and 12b as shown in **Figure 1**. These three regions have a largely Mediterranean climate that is favorable for the production of improved annual pastures and is suitable for cropping. Around 50 per cent of these sheep properties also run cattle.

The national sheep flock was dissected into five discrete production sectors (see **Figure 2**):

- 1) **Self replacing wool (SRW)** This sector breeds its own ewe replacements with sheep sales comprising surplus young wethers and cull for age (CFA) sheep. Replacement rams are the only sheep purchase.
- 2) **Self replacing meat (SRM)** Very similar in structure to the self replacing wool sector with a reduced focus on wool quality and an emphasis on carcass attributes.

Figure 1 Sheep regions

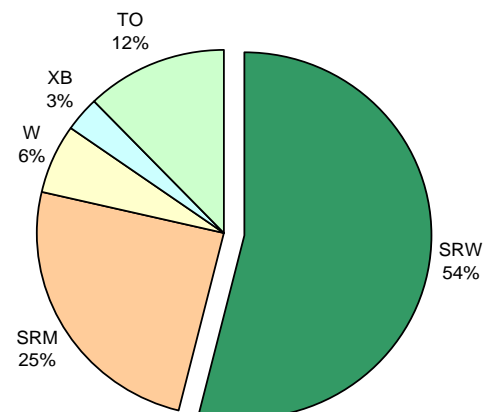
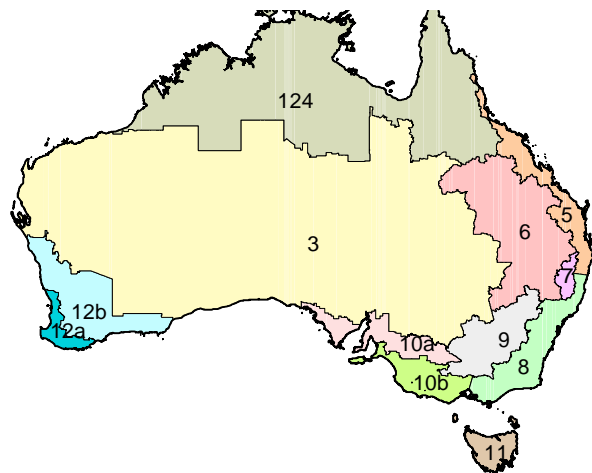


Figure 2 Sheep numbers by production sector

- 3) **Wether based (W)** In this sector wethers represent more than 50 per cent of opening and closing sheep numbers. Replacement wethers are purchased with Cull for age wethers sold.
- 4) **Crossbred (XB)** Exists where crossbred ewes represent more than 30 per cent of ewes mated.
- 5) **Trading & Other (TO)** This sector consists of the sheep not belonging to any of the above sectors, includes sheep feedlots.

Sheep movements in terms of size and timing are driven primarily by the type of production sector involved. For example, 78 per cent of the national flock is involved in self replacing breeding systems where the only movements onto those properties will be stud rams and the only significant movement off the property will be cull for age (CFA) rams and ewes and surplus young sheep (hoggets or lambs).

Sheep movements are mostly restricted to within a 200 km radius from where they were born and bred. For stud animals, this radius of movement might extend to 500 km.

Droughts, recovery from droughts and large seasonal differentials will significantly increase the distances and number of sheep moved compared to a “normal” season. These factors drive the economics of the sale/purchase so that larger margins cover the increased travel costs. High value sheep, transport efficiencies and favourable commodity prices will also increase the distance sheep move.

The geographic distribution of sheep studs, sale yards and live export centers impact on the size and number of consignments. The decline in the number of sheep studs and abattoirs, the increasing popularity of sale mechanisms alternate to sale yards (including internet based auctions), seasonal conditions and favorable prices results in sheep traveling further than they have in the past.

The key factor influencing sheep movement is economics and, with a small profit margin for most sheep production sectors, the distances sheep move will tend to be small. Other factors driving sheep movements include:

- technology and the ability to transport sheep less expensively.
- flock structure/breeding systems (ie. crossbred systems need to buy in replacement ewes and trading systems by definition buy and sell a variety of sheep classes throughout the year).
- disease (such as footrot). Disease is more likely to be a limiting factor on a

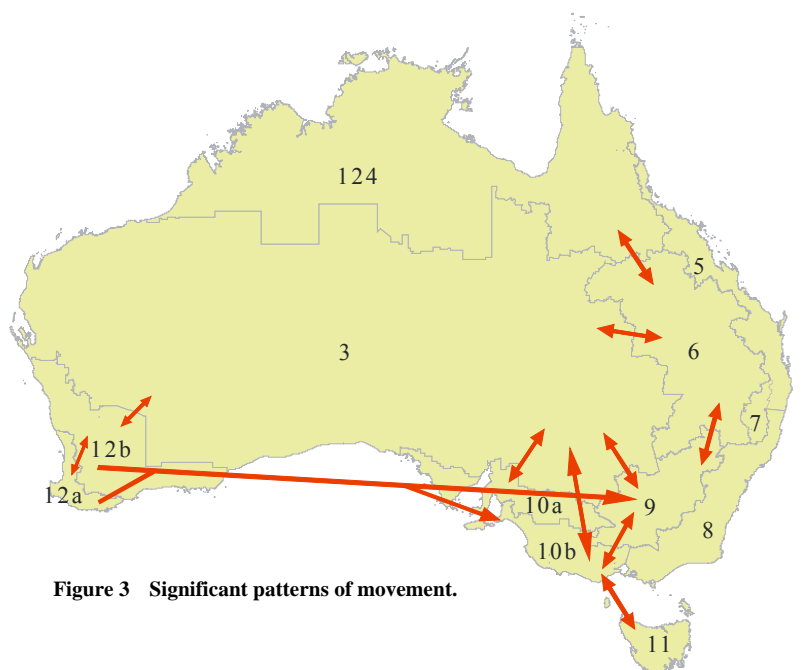


Figure 3 Significant patterns of movement.

-
- local/regional scale as opposed to a national scale).
 - seasons (movement to agistment)
 - commodity price cycles
 - droughts and recovery from drought (sales to abattoirs and re-stocking).

The significant patterns of sheep movement are shown in **Figure 3**.

West to East - Prime lamb and stud sheep from WA (Regions 12a & 12b) to the eastern states – around 100 000 prime lambs annually, nearly all to abattoirs. Up to 25 000 store lambs also move to Wagga Wagga (Region 9) for sale in an average year. Actual numbers will be very dependent on relative seasonal conditions. Movement is driven by marketing to a price advantage and the lack of prime lamb processing facilities in the west.

East to West - There is very limited movement East to West and restricted to mainly stud stock.

North to South – the general movement of sheep in the eastern states is from north to south – driven by access to the major saleyard and abattoir facilities. Re-stocker sheep also move from Queensland into NSW when seasonal conditions in the two regions permit.

South to North – store lambs move from Region 11 to Region 10b – numbers are driven by relative seasonal conditions, prices and a lack of processing capacity – around 250 000 (or one third of the Tasmanian lamb drop) lambs move on average during the summer months. These movements are facilitated by the Bass Strait stock transportation subsidy and are contingent on seasonal conditions being different between Victoria and Tasmania.

SNAPSHOT 2

Structure and Dynamics of Australia's Commercial Poultry and Ratite Industries

This study was commissioned to develop a rational classification of the Australian poultry industry taking into account geographical, production system and marketing factors. Commercial chicken, duck, turkey, ratite (emu and ostrich), squab (pigeon), quail and gamebird industries were approached to provide specific information on farm structure, bird type, inputs, outputs and horizontal contacts such as feed, litter and dead bird movements which may be important in the spread of infection between farms, industry sectors and regions. 'Typical' production enterprises are described within each industry sector as well as the number and structure of birds and any production practices that significantly affect the number, density and mixing of birds.

For each of the poultry sectors, the frequency, timing, direction and source/destination of bird movements that occur on and off 'typical' farms is presented. Factors that may influence the establishment of farms and the buying and selling of poultry and ratites are also identified.

Structure of the Australian poultry and ratite industries

The national poultry and ratite flocks is divided into 10 sectors. These are:

- The chicken meat industry
- The chicken egg layer industry
- The specific pathogen free (SPF) egg and chicken industry
- The duck industry
- The turkey industry
- The ratite industries
- The squab industry
- The quail industry
- The game bird industry
- The “niche” poultry industries

Production areas

The density of chicken meat and egg farms, turkey farms and duck farms is shown in **Figure 4**.

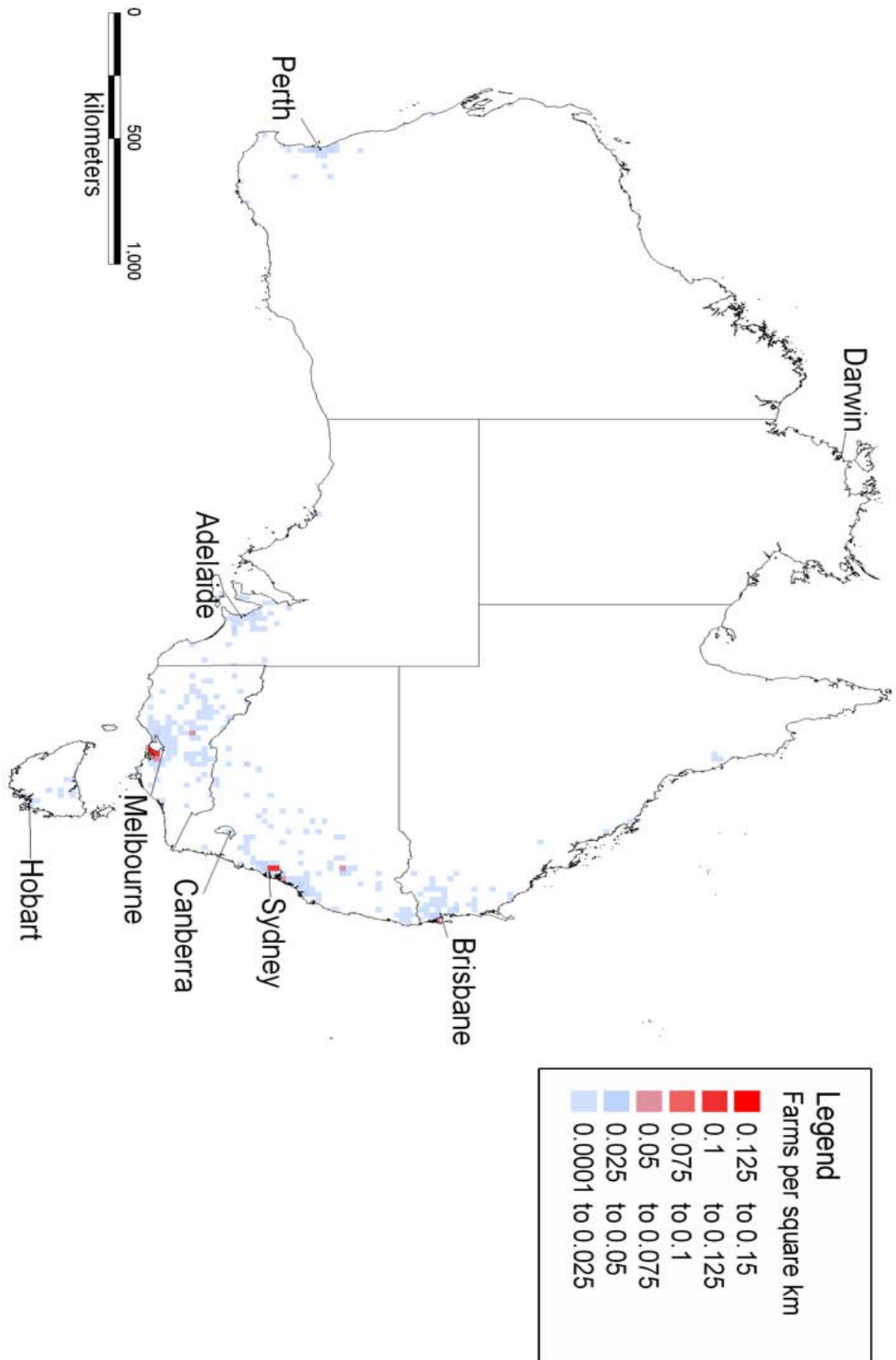


Figure 4 Density of poultry farms

Dynamics of poultry and ratite production

Vertical integration

The degree of vertical integration between the various chicken meat companies varies considerably. Completely integrated companies have their own genetic breeding stock, parent breeders, hatcheries, broiler grow out, processing plants, rendering facilities and feed mills.

At the next level of integration, companies purchase parent breeders and feed supply but are otherwise vertically integrated. Some partially integrated companies may also purchase fertile hatching eggs and day old chicks.

Finally, what are known as 'live sales customers' purchase live poultry to slaughter in their own plants and distribute to their customers. This is not a small sector of the market, being in some states responsible for over 10 per cent of all processed broilers.

All-in all-out production

All meat chicken and around 85 per cent of turkey grow-out farms are single age. Although the majority of farms in the duck industry generally have multiple ages of birds on site, the industry as a whole is increasingly recognising the health advantages of having single age grow-out farms.

The egg layer industry still has a large number of multi-age farms. Typically these layer farms will rear pullets on-site and have a number of ages of birds in production to enable them to achieve a uniform supply of eggs to the market. With the emergence of several large integrators in the egg industry there has been a progressive move to single age farms with off-site rearing. The high incidence of Marek's disease in the early 1990s was one of the factors that influenced this change away from multi-age farms. The remaining poultry industries all operate as multi-age farms and in some cases multi-age sheds.

Movement of livestock and fertile eggs

The livestock and product movements for the chicken meat and egg layer industries is extensive with large numbers of live birds and eggs moving great distances all over Australia on a daily basis. Day-old chick trucks can transport up to 80 000 birds at a time while live bird cartage trucks carry between 4000 to 7000 birds depending on the weight of the bird. To depopulate a 100 000-bird layer farm, extensive vehicular movements are required.

All types of live poultry are commonly transported for long distances over one or two state borders. Day old chicks (DOCs) move in their hundreds of thousands between states each week within Australia, in sealed controlled environment trucks. Reared birds are not uncommonly moved between states in open sided trucks. Turkey eggs and poults are also frequently moved interstate.

There is no particular geographical pattern to poultry livestock and product movements within Australia. While there are records kept by the chicken meat, layer

and turkey industries on their livestock movements which would readily allow traceability in the event of a disease incursion, such information for the niche industries is less readily available. The ostrich industry does keep detailed records on production and bird movements as this is an export requirement of the European Union.

The level of live poultry or poultry product movements within national companies between states, between different companies or between processing plants is quite extensive in the Australian market.

Potential for disease transmission

Horizontal contacts between farms, industry sectors and regions

Identified mechanisms for contact across industry sector flocks and farms included:

- live bird cartage
- movement of eggs and egg fillers
- beak trimming and vaccination contractors
- litter supply and manure/used litter disposal contractors
- non-company and maintenance personnel
- farm sanitation
- dead bird and egg disposal contractors
- rendering of waste materials
- abattoirs/processing plants that process more than one species
- feed manufacture and delivery vehicles
- agricultural shows (the commercial poultry sector has essentially no contact with agricultural shows)
- live bird markets
- facility builders, suppliers of basic materials (including husbandry equipment)
- surface water used by poultry and ratite farms.

Mixed species farming

The game bird, quail and speciality poultry operators are more likely to farm a variety of poultry species than the other poultry industry sectors.

The integrated companies in the meat chicken, turkey and duck industries use in-house written or informal biosecurity plans that prohibit the keeping of other poultry on the premises and this is enforced on contracted growers. In the small and mixed poultry enterprises there is mixing and matching poultry species; this mixing of species helps owners to market specialist products to niche markets. The species in the niche enterprises most likely to be mixed on farm are chickens, ducks, turkeys, and quail. Often there will be a small processing plant on site or in close association with the venture in order to limit the necessity of live bird movements off these mixed species poultry sites.

Seasonal factors

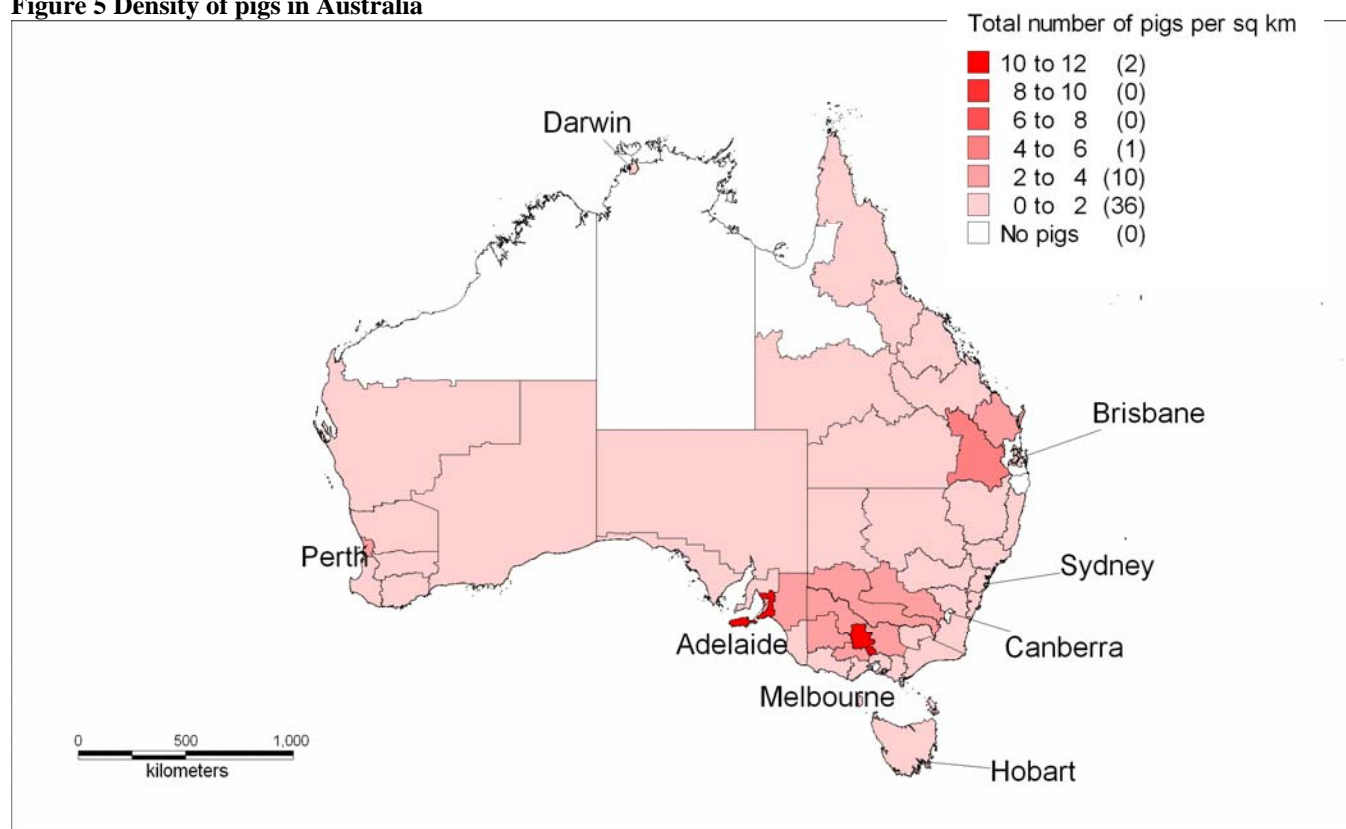
Seasonal factors have a minimal influence on the overall poultry industry dynamics. Game bird and ratite breeding is seasonal and this affects the slaughter and processing dates. The increased demand for fresh turkey meat at Christmas results in increased placements to align with Christmas slaughter.

Current state governments do not consider flocks of less than 1000 birds as commercial flocks and as such they are exempt from many regulatory requirements such as Newcastle disease vaccination. These small flocks account for up to 10 per cent of Australia's table egg production – this production being seasonal with production peaking in spring and early summer.

SNAPSHOT 3 Structure and Dynamics of Australia's Pig Meat Industry

The full report identifies and describes all relevant sectors and production systems within the Australian pig meat industry and details their standard operating practices including the number, type and structure of livestock present on typical (i.e. representative) farms of each sector.

Figure 5 Density of pigs in Australia



Industry & Production Sectors

Industry & Production Sectors	Size/numbers	Geographic Location & Dynamics
seed stock producers/suppliers	About five seed stock suppliers provide most of the breeding stock to the Australian industry. There are 24 seed stock suppliers in Australia. There are no seed stock suppliers in Tasmania and the Northern Territory.	In any one month a single seed stock producer could ship male or female breeding stock to about 38 farms in five states. Similarly a seed stock multiplication herd in WA could receive genes by AI from Queensland and that herd distribute breeding stock over the course of the next month to ten farms in WA. Breeding pigs move commonly between states on a weekly, fortnightly or monthly basis.
AI/semen Centres	12 in Australia. These 12 centres transport, in total, semen to an estimated 315 farms.	There are no commercial semen centres in Tasmania or the Northern Territory while there are five in Queensland. In any one week one semen centre transports semen to between 40 and 80 herds
Outdoor farms	The outdoor sow population is estimated at about 15,000–18,000 sows.	Environmental degradation factors combined with high summer temperatures and seasonal infertility restrict populations of outdoor pigs generally to coastal areas near Albany and areas in Southern Victoria.
Pig farms	There were a total of 329 129 sows in Australia in 2005.	See Figure 5 for the state distribution of this population.
Abattoirs	18 in Australia. See full report for further details.	Most of the abattoirs restrict their kill to pigs from their own or neighboring states. The South Australian abattoirs draw from southern NSW as well as SA and Victoria. Abattoirs will draw from a wider catchment occasionally.
Contractors	In 2005 there were 472 producers in contracting arrangements.	Contractors are concentrated in NSW, VIC and QLD.

Farm Structure/Production Models

Fully integrated - Company owns farms, pigs, a feed mill and an abattoir.

Multi-site systems - Large populations of pigs are not well-tolerated in many areas so farms have developed specialized sites: sows on one site, weaners on another and growers and finishing pigs on another, or any combination of these.

Contracting systems - The precise arrangements vary but, in brief, one party provides the labour and housing facilities and the other provides the feed, the pigs, technical knowledge and sells or slaughters the pigs.

Farrow-to-finish This is the conventional structure of intensive pig farms. In this model the farm breeds, farrows, weans and grows out its own pigs for sale.

Weaner producers - Weaner farms are popular for contracting businesses. The profitability of a farm producing just weaner pigs is lower than one selling finishing pigs so it is unusual for people who own both their pigs and buildings to produce only weaner pigs.

Finisher producers – These are farms where pigs older than 8-10 weeks are grown-out until sale. Finisher farm sites also lend themselves well to contracting schemes. They are often situated on grain farms that have space, surplus labour and can use the effluent on crops.

Movement Dynamics

Seasonal factors - Over the November to February period fewer pigs are sold compared with other months because of the impact of seasonal factors (mostly temperature) on fertility.

Mechanisms for horizontal contact between farms

- Contact with feral animals (pigs, goats)
- Aerosol spread from neighbouring properties
- Live pig markets
- Saleyards
- Agricultural shows
- Abattoirs
- Live animal transport (pig transport vehicles)
- Semen/AI centres
- Staff and visitor movement
- Movement of veterinarians and technicians
- Disposal of dead stock and effluent

Establishments with pigs and other livestock

Eighty-five per cent of pig farms carry ruminants. Sheep in particular are often kept in very close proximity to the pigs because they are used to trim grass between sheds. In addition, effluent is sprayed onto pastures that both sheep and cattle graze.

Agricultural Shows

Pigs were exhibited at 46 agricultural shows in Australia in 2005. A high number of pigs (1196) were exhibited at agricultural shows in 2005 by a large number of exhibitors (86). A number of animal husbandry practices at and prior to/after agricultural shows were identified as posing a potential disease spread risk for pigs.

Live pig markets

Live pig markets exist in most states of Australia. It is estimated that approximately 5 per cent of pigs in Australia are sold live by auction at public saleyards. The highest proportion of pigs sold are baconers. The report found that pigs can move a long distance to and from saleyards — including interstate.

Key findings

- Replacement breeding stock travel long distances to farms but on an infrequent basis.
- Most producers moved live animals off their farms to saleyards and/or to other farms.
- Disease risk is reduced by industry marketing practices whereby relatively few slaughter pigs are sold through saleyards. An estimated 95 per cent of the pigs are sold direct to slaughter, the remainder being sold through saleyards.
- However, each week hundreds of breeding gilts and boars are moved from seed stock producers to customer herds. Currently about 12 seed stock herds supply breeding stock to an estimated 80 per cent of the national herd.
- Thousands of pigs are moved from site to site in two site or multi-site pig production enterprises each week. For example, in one business about 8 000 pigs move weekly from three sow sites to a grow-out site.
- Multi-site production systems, contract production and outdoor systems have become part of the mainstream pig industry. For example, there are about 475 establishments engaged in contract production nationally.
- The use of artificial insemination is increasing and an estimated 60–70 per cent of matings on Australian farms are AI matings.
- On farrow-to-finish farms about 50 per cent of the breeding herd is culled each year and many of these animals are sold in regional saleyards.

SNAPSHOT 4

Structure and Dynamics of Australia's Beef Industry

The full study provides details about the Australian beef cattle population with respect to aggregations and movements. It quantifies the beef cattle population on a regional basis and describes trends in its demographics. The study also describes how and why cattle move between regions during a typical production year, driven by social, economic and seasonal influences.

Classification of Australia's beef cattle industry

The Australian beef industry has been classified into 12 different Beef Regions based on production intensity, climate and topography and into six complementary Production Sectors according to different enterprises and degrees of specialisation (see below). To a very large extent, the Regions are based on aggregations of the

statistical regions used by ABARE for the purpose of collecting farm survey data. **Figure 6** indicates the distribution of beef cattle by Beef Region.

Distribution of meat cattle by Beef Region (one dot per 10,000 head).

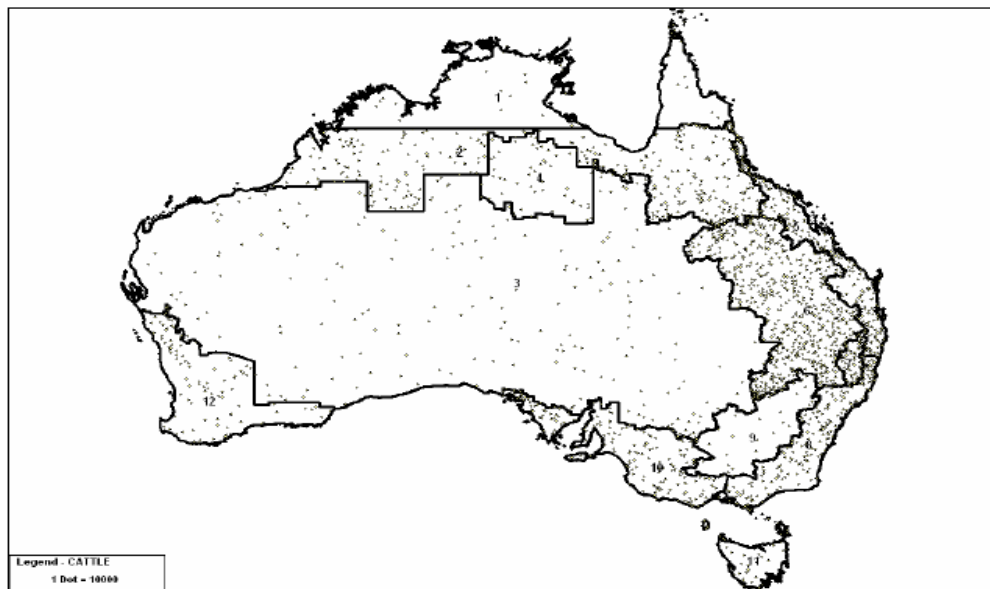


Figure 6

Production Sectors

The major production sectors within the beef industry are defined as follows:

- A. Specialised breeding** – enterprises breeding cattle destined for sale at weaning.
- B. Breeding and growing** – enterprises breeding cattle that are carried beyond weaning and destined for sale as store yearling cattle to be finished at a feedlot or specialist finisher.
- C. Breeding and finishing** – enterprises breeding cattle that are carried beyond weaning and finished for sale for slaughter, generally for the domestic market.
- D. Specialised growing and backgrounding** – enterprises that purchase or transfer-in weaner or yearling steers for growing-out to weights required by specialised finishers or lot feeders.
- E. Specialised finishing on pastures** – enterprises that purchase store stock for the purpose of finishing them to domestic or export market specifications on pasture.
- F. Specialised finishing in feedlots** – enterprises that purchase or transfer-in cattle for the purpose of finishing on high energy grain-based diets to meet domestic or export market specifications. Some specialised lot-feeders are vertically integrated providing product direct to retail outlets in Japan.

Within this report the features of each Beef Region and of each Production Sector are described in detail including the factors that are important in the management of cattle enterprises in the different sectors.

Cattle population and aggregations in each region

Identified sites to which beef cattle move, aggregate and disperse in one form or another include saleyards, feedlots, ports (for live export), agricultural shows and abattoirs. Despite the importance of feedlots, inter-property sales and direct consignment to slaughter, saleyards continue to be critical points of contact and dispersal in the cattle industry with an average throughput of about 6 million head annually.

Saleyards accumulate stock from a wide range of areas and disperse them over large distances, as well as facilitating exchange of ownership. Exchange of ownership through a saleyard can result in the cattle going to slaughter or it might result in them being transported to a new region and production sector.

In the course of a normal production year, cattle move within and between regions in a predictable pattern. In the full report these patterns and their scale have been described by sex and age group and the points of origin and destination traced. Interstate movements of cattle have also been analysed by year and Beef Region.

Factors driving change to beef cattle demographics and movement

Key drivers of change identified include:

- disease eradication (e.g. bovine tuberculosis)
- the infusion of environmentally-adapted breeds
- selection for meat quality
- improved transportation and communications
- integration of large northern cattle operations
- expansion of lot feeding
- opening of large export markets in Japan and Korea (for high quality beef) and South East Asia (for live cattle)
- extensive land development (aimed at improving the environmental sustainability of cattle production).
- land values and alternative uses.

These have resulted in greater integration of the Australian cattle industry both geographically and across the various stages of the production cycle (breeding, growing and finishing).

SNAPSHOT 5

Structure and Dynamics of Australia's Dairy Industry

The full study reports on the Australian dairy cattle population with respect to aggregations and movements, while also classifying the dairy cattle population on a regional basis and describing trends in its demographics. In contrast to the beef industry study, this study highlights that there are relatively few long-distance movements of dairy cattle. Most movements tend to be within the local region, or

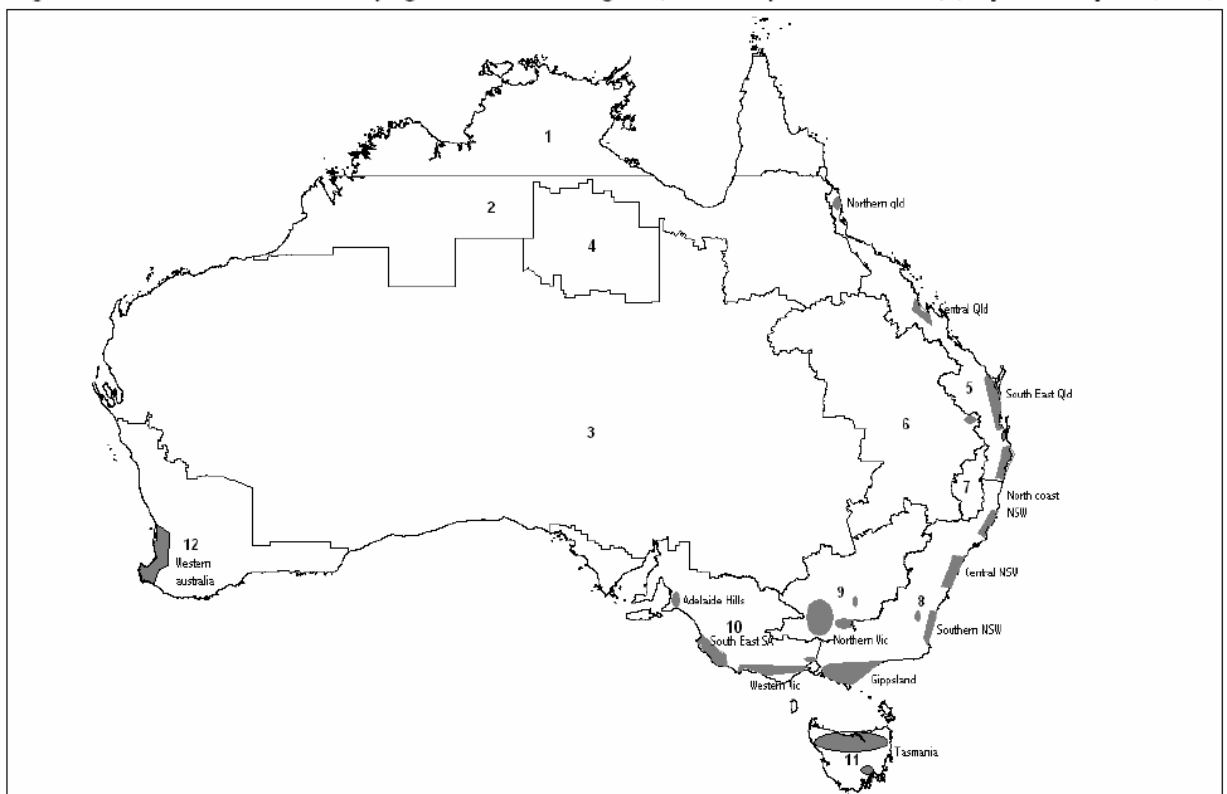
between adjoining regions where herds are located close to regional boundaries. The features of each Region and of each Production Sector are described in detail including the factors that are important in the management of dairy enterprises in the different sectors.

Classification of Australia's dairy cattle industry

The Australian dairy industry has been classified into Dairy Regions that correspond with the 12 different Beef Regions identified in Snapshot 4 of the beef industry study. Because of the clustering of the dairy industry in higher rainfall areas or areas with secure irrigation and feed supplies, only six of the original 12 Beef Regions were classified as Dairy Regions, while two additional regions include relatively small dairying areas. It should also be noted that the main dairying areas within each Region (see Figure 7 below) tend to be localised to a relatively small proportion of the Region, rather than being spread across the Region.

Figure 7

The location of the main dairying areas within the Regions (indicated by the shaded areas) (adapted from Spencer, 2004)



Production Sectors

The industry was classified into five complementary Production Sectors according to different enterprises and seasonality of calving (see **Table 1** below).

Table 1. Production Sectors for the Australian Dairy Industry

Production Sector	Description	Definition
A	Spring calving	The majority (80%) of cows are calved within a single six-week period from July to November.
B	Autumn calving	The majority (80%) of cows are calved within a single six-week period from March to June.
C	Year round, split of batch calving	In excess of 25 consecutive weeks with calving cows is required to calve the majority (80%) of the herd or more than one separate six-week intensive calving periods is required to calve the majority (80%) of cows
D	Heifer rearing	These enterprises contract rear heifers from typically more than one dairy farm from either birth or weaning up to the point of first calving as 2 yo
E	Bull beef	These enterprises buy dairy bull calves either before or after weaning and raise them entire for sale as bull beef around 24 months of age

Dairy cattle population and aggregations in each region

In some regions, movements are strongly seasonal with peaks at drying-off and calving.

Additional data collected and reported on includes:

- saleyards handling large numbers of dairy cattle in each Region
- calf scales and collection points
- bull beef and dairy-beef rearing
- heifer rearing
- shows and Special sales
- abattoirs located in dairying areas
- knackeries
- live exports of dairy cattle.

The six main Australian Regions and their constituent Production Sectors are described in detail in Table 4 of the full report. Each Production Sector in each Region is described under the following headings:

- Herd structure
- Turn-off patterns
- Factors influencing turn-off
- Drivers of change.

Factors driving change

Factors affecting dairying in individual Regions in the medium term are described in the report as well as factors affecting national change and long-term change. These factors include:

-
- restructuring of farm business
 - shortage of skilled labour
 - competition for cattle (export market)
 - competition for land and resources (other primary industries and urban migration)
 - consolidation at the processor level
 - the increase in domestic competition (driven by deregulation, supermarkets and imports from New Zealand)
 - the improving but volatile international markets.

SNAPSHOT 6

Structure and Dynamics of Australia's Saleyards Industry

The central purpose of this study was to collate, map and tabulate historical and recent data to define the movement of sheep, cattle (beef and dairy), pigs and horses through the saleyard network across Australia.

Information collected about saleyards included:

1. regularity, species and number of sales each year
2. distance and direction of stock movements
3. factors influencing vendor and buyer numbers at sales
4. annual throughput in an "average" year, by species and class of animal
5. issues about long term viability.

One hundred and ninety four "operational" saleyards were identified across Australia. "Operational saleyards" were defined as those yards that have "predictable" sales, usually on a regular basis and with significant livestock throughput. Almost 40 per cent of the saleyards were located in NSW with another 40 per cent based in QLD and VIC (see **Figure 8**). Nearly all saleyards were located in the high rainfall and wheat/sheep zones on major arterial roads.

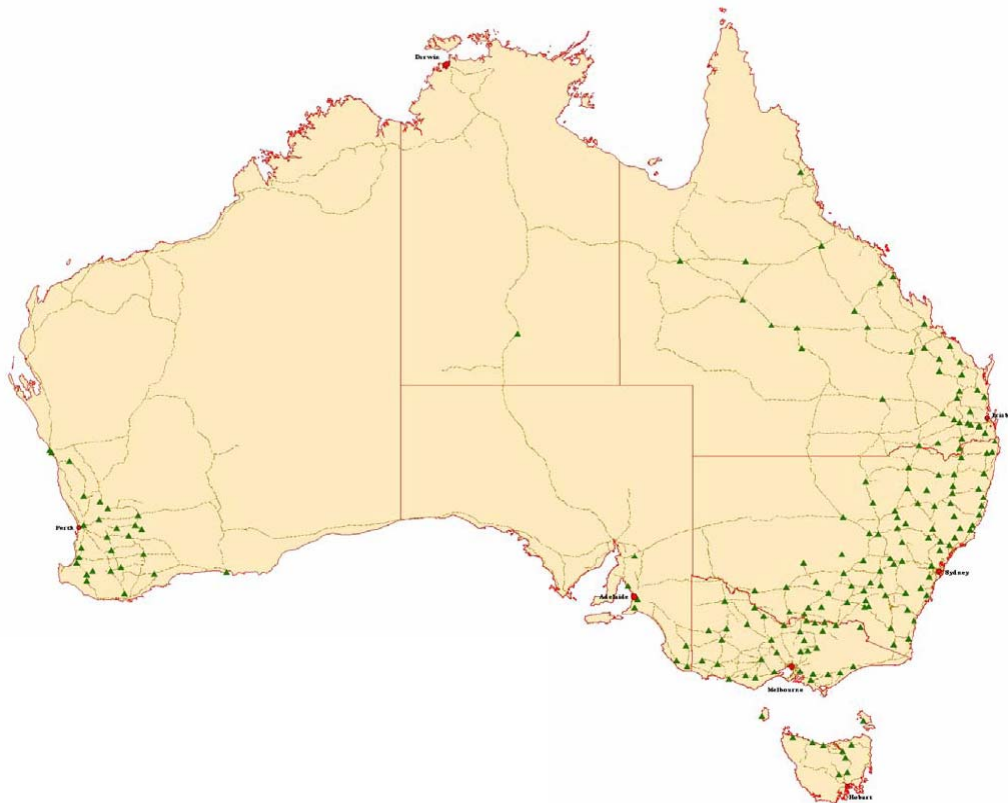
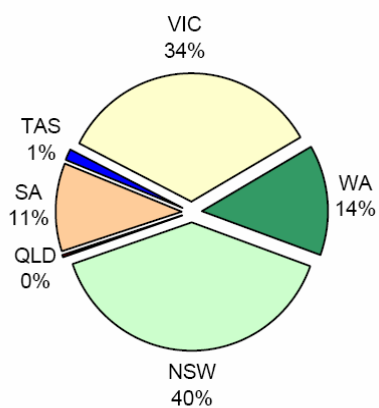


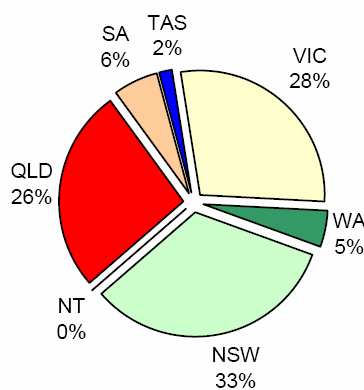
Figure 8 - Distribution of saleyards and proportion of annual sales by state

During an “average” year some 19 million sheep and 6 million cattle are sold through the national saleyard network, with the majority of sheep (73%) and cattle (62%) being sold through NSW and Victorian saleyards.

SHEEP - proportion of national sales



CATTLE - proportion of national sales



Seasonal conditions and the reputation of the saleyards are the most important drivers influencing which saleyards vendors send their stock to, and which yards buyers attend to purchase stock. Expected prices are also important drivers for vendors while it is the quantity and reputation of the livestock that motivate buyers to purchase from a particular saleyard.

Broadband, digital technology, the removal of on-line selling charges and the ability to set up internet systems with minimal overheads have helped on-line selling systems to become a real alternative for selling livestock. On-line web-based auctions allow commodity transaction, reserve price setting and legal change of ownership to take place without the seller, buyer or product having to come together physically at the time of the sale.