

**A Review
of the
Structure and Dynamics of the
Australian Beef Cattle Industry**

A Report

to the

**Australian Department of Agriculture,
Fisheries and Forestry**

by

AusVet Animal Health Services

June 2006

Table of Contents

Executive Summary	ii
1 Background	1
2 Terms of Reference	3
3 Approach	5
4 Production sectors	7
5 Beef regions	8
6 Cattle population	30
7 Aggregations of cattle	36
8 Expert opinion on the “Typical Beef Herd”	51
9 Interstate movements	57
10 Factors influencing demographics and movements at the national level	62
Acknowledgements	65
References	66
Appendices	
1. Saleyard throughput of cattle in mainland Australia.	A1
2. Expert opinion on the “Typical Beef Herd”.	A6

Executive Summary

Despite the ongoing drought in much of Australia, strong international demand for beef from countries that are demonstrably free of serious diseases has contributed to the Australian beef industry enjoying its third consecutive year of strong prices and good returns. The favorable health status of the Australian cattle industries is a major factor underpinning the industry.

Understanding patterns of movements of and contacts between susceptible animal species is an important factor in successful control of animal disease and in management of livestock production and health in Australia. In the post-BSE (Bovine spongiform encephalopathy) environment, managing feed sources has also become an important aspect of disease control and health assurance.

This study represents the most comprehensive compilation of data on 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. The details provided by the study will be useful for modelling herd dynamics and for informing international observers about the essential nature of Australia's cattle industry relative to their own.

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). The criteria by which the regions have been differentiated are consistent with those recommended by FAO (Sere & Steinfeld, 1995). To a very large extent, the regions are based on the boundaries of the statistical regions used by the Australian Bureau of Agricultural and Resource Economics (ABARE) for the purpose of collecting farm survey data.

Production Sector	Description
A	Specialised breeding
B	Breeding and growing
C	Breeding and finishing
D	Specialised growing and backgrounding
E	Specialised finishing on pasture
F	Specialised finishing in feedlot

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

The structure of the beef cattle population in each Beef Region has been derived from the most recent ABS survey data for meat cattle. The numbers of herds and cattle in each Production Sector within each region has been estimated from expert opinion following consultation with people with extensive knowledge of the beef industry in each region.

A wide variety of industry and government sources have provided data on sites to which beef cattle move, aggregate and disperse in one form or another. These sites include saleyards, feedlots, ports and abattoirs. However, in recent years government agencies have largely withdrawn from regulating or overseeing many aspects of livestock production and marketing. With the introduction of privacy legislation and increased industry self-regulation, data of a commercially sensitive nature are now held by individual businesses or held in confidence by industry associations.

Although throughput data for individual feedlots and abattoirs were not available, this report includes valuable consolidated data on the throughput of most Australian saleyards. 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. Saleyards accumulate stock from large 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. These patterns and their scale have been derived from expert opinion and are described by sex and age group and origins and destinations.

Factors driving change

Australia's cattle production systems have changed rapidly since the "cattle crash" of the early mid 1970's. Among the key drivers of change have been:

- disease eradication
- 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). Thus, more individual producers are now specialised in a single facet of production according to their mix of natural resources, proximity to end markets and management skills (Whan and Backus 2005).

1. Background

This project is a component of a larger study being conducted by the Australian Department of Agriculture Fisheries and Forestry (DAFF) of the role that normal animal movements may play in the spread of a disease. DAFF has determined that obtaining detailed information on the structure, husbandry practices and movement patterns of Australia's cattle herd is an important research priority. This information can be used in a range of applications but is particularly important for:

- Detailed assessment of the risk of diseases like BSE establishing and spreading in Australia.
- Developing an understanding of the potential impact of disease incursions.
- Developing management plans to apply in the event that particular exotic diseases infect the cattle population.

This beef cattle project is the first of a series of five similar projects covering different livestock industries.

Government agencies such as the Australian Bureau of Agriculture and Resource Economics (ABARE) and the Australian Bureau of Statistics (ABS) regularly collect data on the beef and other agricultural industries. Valuable interpretive summaries of much of these data are published in readily accessible formats by ABARE and by Meat and Livestock Australia, as in the Australian Beef Industry series of updates (ABARE 2004). Australia produces just over two million tonnes of beef and veal annually, 62% of which is sourced from Queensland and NSW.

In a review paper, Bindon and Jones (2001) described the history and structure of the supply chain and the production and marketing systems used in the Australian beef industry. They also described beef herd and turnoff but principally at a national level. Later, Cunningham *et al.* (2002) conducted a preliminary study and proposed methods to collect data on cattle aggregations and movements. They mapped the location of saleyards, feedlots, ports, abattoirs and rendering plants on Australian maps and the distribution of cattle by Statistical Local Area (SLA). They also described cattle movements at the national level and their report is a valuable resource to be read in conjunction with this study.

Demographic data on the beef industry are regularly summarised at the state level or according to the 33 ABARE agricultural regions. To assist understanding the industry and planning for disease control at a regional level, this study has identified 12 unique regions or *Beef Regions* in Australia. The report describes the structure of beef cattle populations, aggregations and movements of cattle within and between these regions and describes the drivers and trends affecting the industry at a regional level. It also defines six complementary beef *Production Sectors* or enterprise types for the purposes of

Structure and Dynamics of the Australian Beef Cattle Industry

categorising and describing the industry. One or more of these Production Sectors occur in each Region.

2. Terms of Reference

DAFF developed the following Terms of Reference for this project:

A. Structure of the Australian Beef Cattle Herd

1. Identify and describe all relevant sectors/production systems within the Australian beef cattle industry and detail their standard operating practices eg. extensively grazed herds in northern Australia supplying the live export trade.
 - Identified sectors/production systems should be cross-referenced to previous classification systems including the FAO classification systems (Sere & Steinfeld, 1995).
 - The geographic location of each identified sector/production system should be identified (and related to the 33 survey areas used by the Australian Bureau of Agricultural and Resource Economics for their cattle and sheep surveys).
2. Identify within each sector any practices that significantly affect the animal density, such as frequent mustering or yarding.
3. Detail the nature of pasture predominant in each production system.

B. Dynamics within the Australian Beef Cattle Herd

1. Detail broad cattle movement patterns within each production system identified under A1 above.
2. Identify industry factors that impact on the nature, timing and direction of cattle movements within each production system.
3. Identify factors (meteorological, environmental, sociological, financial etc) that affect when production units make animal purchases and sales.
4. Identify key areas of livestock congregation or clustering as a result of movements eg:
 - assembly of animals for live export
 - rest stops on transport corridors, travelling stock routes
 - agricultural shows
 - others.

Outputs

The major output of the project will be a report that:

Structure and Dynamics of the Australian Beef Cattle Industry

1. Provides a rational classification of the Australian beef industry that takes into account geographical, production system and marketing factors. This should include distribution maps that show where the various sectors occur in Australia.
2. Describes for 'typical' livestock production enterprises within these sectors the number and structure of livestock as well as any production practices that significantly affect the mixing of animals and animal density, such as frequent mustering or yarding.
3. Identifies and discusses sources of information on cattle movements.
4. Describes, for each of the sectors, the frequency, timing and direction of cattle movements that occur on and off 'typical' farms.
5. Identifies factors that may influence the buying and selling of cattle.
6. Identifies particular issues or areas associated with the respective sectors that may be associated with increased clustering and mixing of cattle from different sources.

3. Approach

The project design was developed in consultation with staff of the Office of the Australian Chief Veterinary Officer (OCVO). Specifications included:

1. Develop a logical system to classify sectors of the Australian beef industry and regions based on the types of enterprise, seasonality of production and the outputs of the production system.
2. Describe each sector, in relation to FAO criteria, including current trends in production and marketing of beef cattle and the factors affecting these. (Note that boundaries may overlap).
3. Map the approximate boundaries of each of these sectors in relation to ABARE regions.
4. Describe the approximate numbers of beef cattle and herds and the typical herd size, structure (including age structure) and management in each sector and significant variations that occur from the average herd.
5. Describe the patterns of movements of cattle into and out of typical herds (including clustering, seasonal variations, the origins and destinations of movements within regions and outside the region).
6. Describe and estimate the approximate numbers of animals moving into and from typical herds to another sector.
7. Identify the factors that drive the typical production systems, herd structures and movements in each sector.
8. Identify the factors that drive significant exceptions to the normal pattern of movements into and out of the sector.
9. Identify other significant aggregations of beef cattle in each sector, describe the pattern of movements and estimate the numbers of animals moving into and out of the sector.

The project team comprised personnel with long-standing experience and extensive contacts in the cattle industry:

David Kennedy, AusVet Animal Health Services Pty Ltd (Project Leader)
Evan Sergeant, AusVet Animal Health Services Pty Ltd
Ian Whan, Rural Management Partners Pty Ltd
Bob Freer, Antek Pty Ltd

Angus Cameron, AusVet Animal Health Services Pty Ltd

To facilitate the development of a consistent data set across Australia, the project developed two core concepts:

- *Beef Region* – 12 unique geographic regions were identified, taking into consideration but not limited to the FAO classification system described by Sere and Steinfeld (1995). These were digitally mapped in relation to ABARE agricultural regions (Figure 1).
- *Production sector* – six different but complementary production sectors were identified (Table 1).

The project utilised the following tools and resources: 1) expert data sources, 2) standards for data collection and recording and 3) expert opinion.

1) Existing data sources

Existing sources of aggregated data that could be accessed and collated within the budget and time frame of the project were identified. These included:

- ABS Commodity Survey data on the meat cattle population for 2002-2003.
- Locations of major aggregation points such as abattoirs, saleyards, feedlots and ports from a range of statutory authorities and industry organisations.
- Numbers of cattle aggregating at these points, where possible on a monthly basis to allow seasonal patterns to be calculated.

2) Standards for data collection and recording

A standard template has been used to describe each Beef Region and Production Sector in a logical, comprehensive and consistent manner (Table 6).

3) Expert opinion

OCVO requested that important characteristics of the “typical beef herd” be described in a structured manner. To describe on-farm mustering, supplementary feeding management and movements within and between Beef Regions, expert opinion was sought by telephone. A questionnaire was used to collect a standard data set on each Production Sector represented in each Region from people with a broad understanding of the region’s industry.

To provide the data required for further analysis and modelling by OCVO, the results of the study are presented primarily in tabular form.

4. Production Sectors

As a means of classifying the key types of enterprises comprising the Australian beef cattle industry, six different *Production Sectors* were identified (Table 1).

Table 1. Production sectors within the Australian Beef Industry

Production Sector	Description
A	Specialised breeding
B	Breeding and growing
C	Breeding and finishing
D	Specialised growing and backgrounding
E	Specialised finishing on pasture
F	Specialised finishing in feedlot

These production sectors 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 off 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.

5. Beef Regions

The criteria developed by Sere and Steinfeld (1995) for the United Nations Food and Agriculture Organisation (FAO) as the international standard for classifying agricultural land (Table 2) were used as the basis for the identification of the natural regions of the Australian beef industry. The Landless category was not relevant to the beef cattle industry and therefore was not used in describing Australia's Beef Regions.

Table 2. FAO criteria for global classification of agricultural land.

(Sere and Steinfeld 1995).

Use	C	Cattle only
	L	Livestock only
	M	Mixed farming/livestock
Intensity	G	Grassland
	L	Landless
	F	Significant feedlot activity
Climate	A	Arid
	H	Humid
	T	Temperate

Geographical features such as those isolating Western Australia and Tasmania were also taken into consideration in defining the 12 Beef Regions (Table 3).

Table 3. Australian Beef Regions and their relationship to ABARE regions, classified by FAO global land use criteria.

Australian Beef Industry Regions		Constituent ABARE regions	FAO criteria		
No	Geographic Name		Use	Intensity	Climate
1	Far North	north 511, 714, 713, 311	C	G	H
2	Lower North	south 511, 713, 714, 711, 313	C	G	H
3	Arid Zone	512, 711, 312, 411, 111, 599	L	G	A
4	Barkley Tableland	712	C	G	A
5	Tropical North-east Coast	391, 332, north 132	C	G	H
6	Central Qld and North-west NSW	314, 322, 121, 321	L,M	G,F	T
7	New England	north 131	L	G,F	T
8	Temperate South-east Coast and Tablelands	south 132, south 131, east 231, 999	L	G	T
9	Temperate Slopes and Plains	122, 123, 223,	M	G,F	T
10	Mediterranean	431, 422, 421, 222, 221, west 231	M	G	T
11	Tasmania	631	M	G	T
12	South-west WA	522, 521, 531	M	G	T

The boundaries of the Beef Regions were digitised and overlaid on the digital boundary files of 33 ABARE regions (Figure 1) listed in Table 3 to produce digitised map of the Beef Regions (Figure 2).

The beef Production Sectors in each of the Beef Regions are listed in Table 4 and the estimated percentages of herds in each region which are part of each sector are summarised in Table 5.

Figure 1. ABARE regions (ABARE).

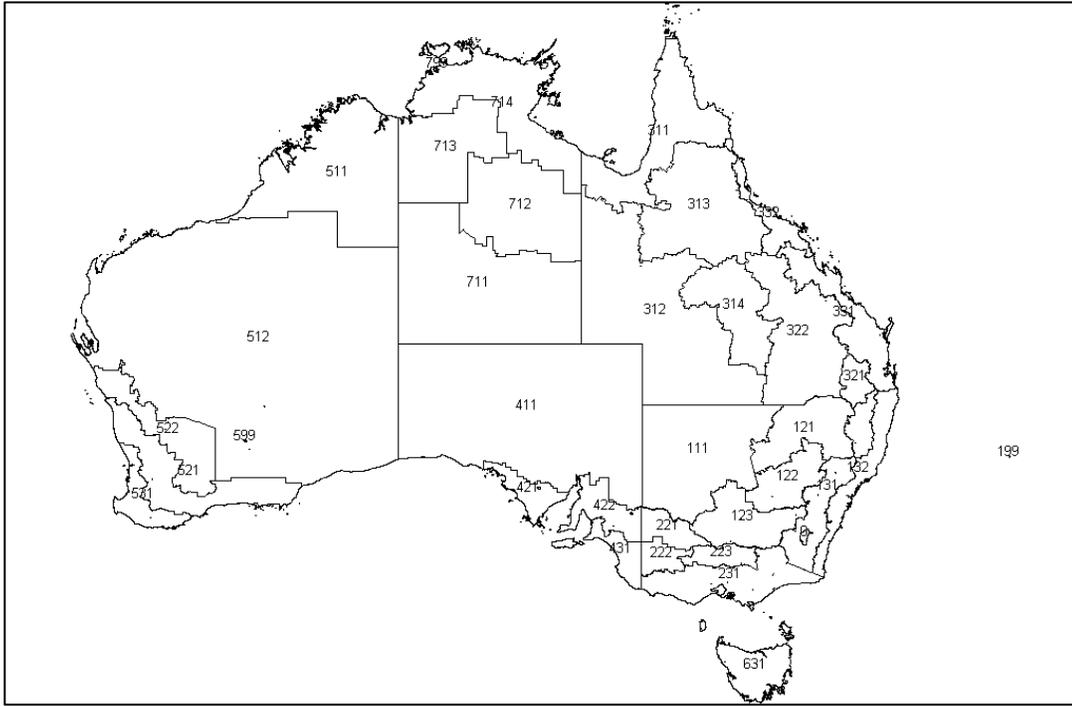


Figure 2. Beef Regions in relation to ABARE regions.

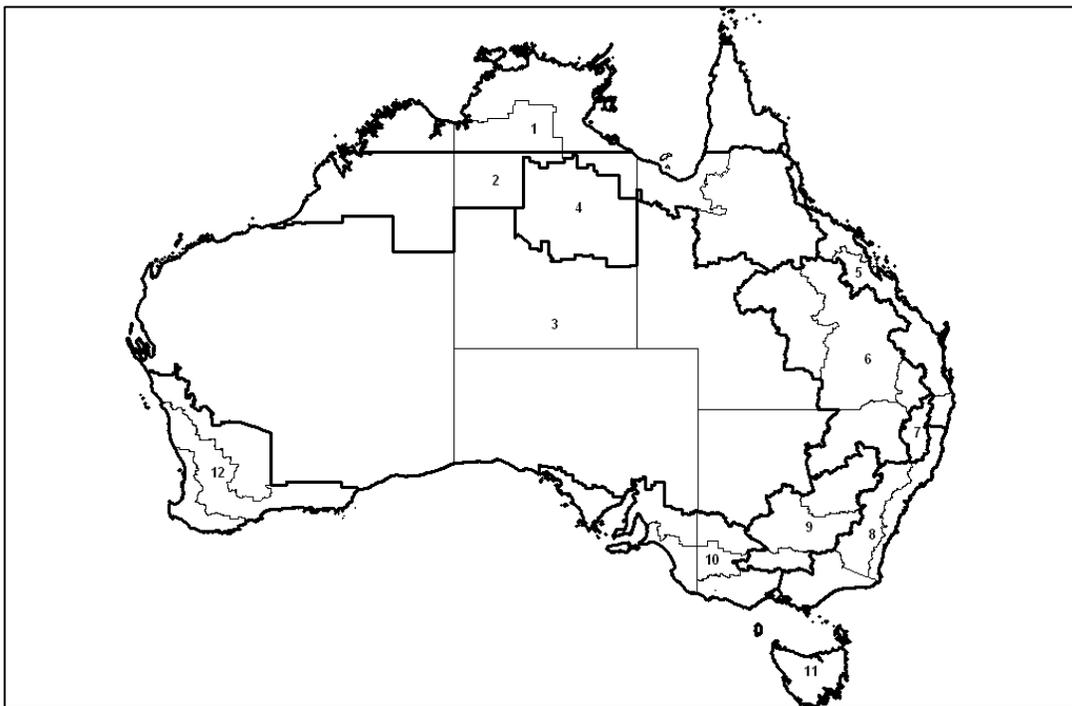


Table 4. Distribution of 6 Production Sectors across the 12 Australian Beef Regions.

Beef Regions		Production Sectors					
No.	Geographical Name	A	B	C	D	E	F
1	Far North		+		+		
2	Lower North	+	+	+			
3	Arid Zone		+				
4	Barkley Tableland	+					
5	Tropical North-east Coast		+	+			
6	Central Qld and North-west NSW		+	+		+	+
7	New England	+	+	+			+
8	Temperate South-east Coast and Tablelands	+	+				
9	Temperate Slopes and Plains	+	+	+	+	+	+
10	Mediterranean	+	+	+		+	
11	Tasmania	+	+			+	+
12	South-west WA	+		+		+	+

Key to Production Sectors:

- A Specialised breeding
- B Breeding and growing
- C Breeding and finishing
- D Specialised growing and backgrounding
- E Specialised finishing on pasture
- F Specialised finishing in feedlot

Table 5. Estimated percentages of cattle herds by Production Sector in each Beef Region.

Beef Regions		Production Sectors					
No.	Geographical Name	A	B	C	D	E	F
1	Far North		60		40		
2	Lower North	20	50	30			
3	Arid Zone		100				
4	Barkley Tableland	100					
5	Tropical North-east Coast		70	30			
6	Central Qld and North-west NSW		50	28		20	2
7	New England	30	30	30			10
8	Temperate South-east Coast and Tablelands	50	50				
9	Temperate Slopes and Plains	15	20	20	10	10	25
10	Mediterranean	30	25	25		20	
11	Tasmania	40	45			10	5
12	South-west WA	35		40		10	15

The 12 Australian Beef Regions and their constituent Production Sectors are described in detail in the following tables (Tables 6, Regions 1-12). Each Production Sector in each Beef Region is described under the following headings:

- Herd structure
- Turnoff patterns
- Factors influencing turnoff
- Drivers of change

Table 6: Description of Australia’s 12 Beef Regions and their respective Production Sectors.

REGION 1: Far North (CGH)				
<p>This region is north of the 15th parallel and takes in the north Kimberley, the far Top End and northern Cape York. Much of the area is sparsely populated and devoted to national parks and wilderness. With the exception of the marshalling depots south of Darwin, it is considered a difficult environment due to rough country, low nutrient grasses, heavy tick infestation and poor infrastructure. Brahman is the major breed type with the steer portion usually marketed to the live export trade, although the eastern side of this region has more market flexibility. Most females go to live export with some sold to meatworks. The huge aggregation of cattle for live export is the major driving force, at least while this market is competitive. Cattle introductions to the region depend on the relative strength of the live export market. This was relatively weak in 2004 and therefore the catchment was confined to the far west and north. The region could face disease risks due to high exposure to the coastline which is vulnerable to introductions from the north. Surveillance of Australia’s northern coastline is designed to address this risk.</p>				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(B) Breeding & growing	Cattle are predominately Brahman and Brahman derived. Herd size ranges from very small to 25,000 breeders with an average herd size of 3,000 breeders. Some relatively small operations south of Darwin where agriculture is more diversified.	12 to 24 months of age, 300-360 kg destined for the live export trade ex Karumba, Darwin or Wyndham ports. Cows culled for age and faults are mostly exported live with some slaughtered at southern abattoirs catering to the US lean beef market.	Seasons are usually fairly reliable but native pasture is poor except during the wet. Improved pastures are highly productive by comparison. The farther south and east, the more scope for marketing either north (to live export) or south (to re-stockers). Strength of the live export market determines the numbers that will be marshalled in the Top End.	Top End agriculture is becoming diversified relative to specialised cattle areas in regions 2 and 4. Region 1 is used to aggregate and finish for the live export trade. Areas around Katherine and Daly River are likely to continue diversifying into horticulture and tourism.
(D) Specialised growing and backgrounding	A lot of cattle brought into the area and held prior to live export – mainly through Darwin. Depot size highly variable. Marine plains very productive but only accessible during the dry season. Cattle can gain 1 kg/day on these pastures.	Cattle loaded on boats at Karumba, Darwin or Wyndham ports, destined for markets throughout SE Asia according to shipping schedules. Turnoff is during the dry season and dictated by condition and scheduling of the boats.	Live steers should weigh about 340 kg and be in forward condition (ie, AusMeat condition score 3.5 with 10-12 mm fat over the rump), ideal for entry into a feedlot once they arrive at destination market, principally Indonesia. The heaviest steers and bulls (>400 kg) may go direct to slaughter once they arrive in the destination country.	A fairly volatile market due to sensitivity to exchange rates and competition from southern markets. High reliance on live exports will remain in the Top End, the northern Kimberley and Peninsular.

Structure and Dynamics of the Australian Beef Cattle Industry

REGION 2: Lower North (CGH)				
<p>This region takes in the central Kimberley and Northern Territory, upper Gulf and lower Cape York (broadly the band falling between the 15th and 20th parallel) and is highly specialised in the production of cattle. Due to harsh conditions and ticks throughout, the cattle have to be highly adapted to be productive. Land holdings are vast with many breeding for the live export trade but price at the time determines market direction. Corporate ownership is important in this region and results in a sharp distinction between specialised breeding (for finishing in the south) and breeding/growing (for live export). Brahman is the dominant breed type although cross breeding and composites are also important. Cattle work ceases for 2-3 months over the wet season. Normally there is low disease risk due to sparse cattle population, minimal introductions and isolation. Prolonged drought can result in exceptional turnoff of heifers and breeders. This region is generally considered a more important cattle producer than either region 1 or 3.</p>				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(A) Specialised breeding	Specialised breeding is confined to the integrated beef producers owning growing property further south. Cattle are predominately Brahman, Brahman derived or composites. Herd size ranges from 3,000 to 15,000 breeders with an average herd size of 7,000 breeders. Calving generally is Nov-Jan but is dependent upon seasonal conditions.	Less than 12 months of age, generally Oct-Nov. Weaners 150-200 kg are trucked to growing and finishing country/feedlots further south (within regions 2, 6 or 12), sometimes owned by the breeder. Cows culled for age and faults are mostly slaughtered at southern abattoirs (at Innisfail, Mackay, Rockhampton and Brisbane, or Adelaide or in south-west WA) catering to the US lean beef market.	Less than 12 months of age, generally Oct-Nov. Weaners 150-200 kg are trucked to growing and finishing country/feedlots further south generally owned by the breeder. Cows culled for age and faults are mostly slaughtered at southern abattoirs catering to the US lean beef market.	This region is increasingly catering to the needs of finishing operations further south. Specialised breeding will be encouraged by better genetics (aimed at high meat quality), higher prices for growing cattle and better trading systems. Corporate style cattle production currently expanding.
(B) Breeding & growing	As above but with a higher reliance on Brahmans. Herd sizes likely to be slightly smaller with more independent producers. Poor seasonal conditions will bring forward age/weight of turnoff making this sector indistinguishable from sector A.	12 to 24 months of age, 290-350 kg destined for the live export trade ex Darwin or Wyndham or Broome ports. Cows culled for age and faults are mostly slaughtered at southern abattoirs catering to the US lean beef market.	Some or all steers will be sold lighter in the event of a poor wet season. High prices might bring forward the sale of females – either heifers or older breeders depending on relative prices. Difficult to make any hard and fast rules about age and weight of turnoff due to variability of seasons and implications for cash flow and business sustainability.	This sector is largely driven by the price differential between the live export and domestic markets. If there are export opportunities, poor progeny are directed to southern markets but opportunities for high grade Brahman are limited due to perceptions regarding meat quality.

Structure and Dynamics of the Australian Beef Cattle Industry

(C) Breeding & finishing	Higher proportion of steers in the herd with better country used to obtain finished condition in terms of weight and fat cover.	Steer turnoff targeted at the “Jap Ox” market implying liveweights of at least 560 kg.	Endeavour to achieve a dressed weight of 300 kg or better at less than 4 years of age. Cull heifers also sold at relatively heavy weights.	Poor seasonal conditions are making this sector difficult to sustain but otherwise regarded as the most profitable sector because of selling of heavy weight, finished cattle.
-------------------------------------	---	--	--	--

REGION 3: Arid Zone (LGA)

This region accounts for almost half of continental Australia and includes several desert areas where there is no commercial agriculture. In aggregate, however, the region is devoted to livestock, with sheep and goats being more important in some areas than cattle. Extensive cattle production occurs over most of the region with more British breeds than in regions 1 and 2 due to the absence of ticks. Disease risks are very low due to aridity and minimal introductions of cattle. Herd bulls tend to be the only introduction and these have to be treated (eg, liver fluke) and quarantined before entering new areas in WA. Prolonged drought can result in exceptional turnoff of heifers and breeders. Several sub-regions can be identified. An important sub-region is the Channel Country in SW Queensland and NE South Australia. Following big wet seasons in the north, the Channel Country experiences wide-slow floods resulting in high protein feed that was traditionally used for finishing bullocks. Corporations practicing integrated beef production now use their channel properties for growing out. High temperatures prevent cattle work during the peak of summer but turn-off is possible for 8-9 months of the year. The area is currently in drought with stocking rates being reduced. The mean herd size is about 1,500 head with an estimated range of 600 to 10,000.

SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(B) Breeding & growing	The most widespread sector with male cattle being sold to live export trade and through store markets at 1-3 years. Brahman cross cattle popular for heat and drought tolerance.	Heavier steers out of the north-west go to the live export market out of Broome and Port Hedland with lighter steers consigned to southern saleyards. On the eastern side greater emphasis is on growing out for feedlots.	The normal pattern of turnoff is through the winter until October. Due to single muster there are big variations in turn-off weights. Season and prices are the major influences. When feed supplies are plentiful, cattle are held to higher weights. Specialised breeding rare due to drought risk.	A low input-low output part of the industry that has learnt to adapt to harsh conditions. Live exports have been the saviour of this region and sector especially in the far west and far north west.

REGION 4: Barkley Tablelands (CGA)				
The Barkley Tablelands cover an area of some 500,000 sq km of tree-less plains of north western Qld and central NT. Vegetation is classified as tussock grassland dominated by Mitchell Grass (<i>Astrebla</i> spp). Rainfall is < 500mm per annum mostly received Dec-Mar. Seasonal conditions normally regarded as reliable even though the stocking capacity of the country is very low. Extensive cattle production is the only form of agriculture in the region. Land holdings are large (>3,000 sq km) and dominated by corporate producers although a number of independent operations still exist. Very low disease risk due to isolation and very few introductions – only herd bulls. Usually fairly reliable but prolonged drought can result in exceptional turnoff of heifers and breeders.				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(A) Specialised breeding	The Barkley is best described as a 'calf factory' for integrated producers. Breeders are predominately Brahman, Brahman derived or stable composites. Herd size ranges from 10,000 to 25,000 breeders with an average herd size of 12,000 breeders. Calving generally is Dec - Feb.	Weaner steers less than 12 months are trucked out from June to Sept. Weaners 150-200 kg are trucked to growing country further south (eg, in the Channel region of SW Queensland) generally owned by the breeder. Cows culled for age and faults are mostly slaughtered at southern abattoirs catering to the US lean beef market.	Breeding patterns in this region are controlled by seasonal conditions (rainfall). Lack of expected seasonal rainfall influences the age/weight/numbers of progeny the following year. Prolonged drought may see movement of breeding cattle to southern areas. Generally speaking the region has reliable wet seasons.	The move to composite breeds by corporate breeders is improving the fertility of breeders and the meat quality and market opportunities of progeny. Possibly the best example of specialised breeding for integrated beef production in the nation. Trend to specialised breeding will continue with accent on genetics, fertility and costs.

REGION 5: Tropical NE Coast (CGH)				
<p>This region takes in the east coast from Far North Queensland to Grafton on the north coast of NSW. The region contains a lot of timber, sugar cane, horticulture and population as well as cattle. Apart from in river valleys and the Queensland Highlands, much of the country available to cattle is infertile and better suited to breeding and growing than finishing. Ticks are an issue at least to the NSW border and Brahman types are used to assist with management of this and other parasites. High herd fertility allows most producers to turn off weaners. These are bought by growers who want to on-sell to feedlots and local producers with better country that can finish steers and heifers for the domestic market. Year-round turn-off is possible although the feed supply is summer dominant. Numerous cattle movements, saleyards and studs make the region a relatively high disease risk.</p>				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(B) Breeding and growing	Steers retained to permit sale of a heavier animal. But in the event of drought, producers may elect to sell at lighter weights and become more like sector A.	Sales made throughout the year to finishing operations – principally feedlots in region 6. The average herd size is about 300 head, with an estimated range from 50 to 1,500.	Seasonal conditions might hasten sales but producers are likely to suffer large price discounts if they fail to bring steers up to the feedlot specifications.	Breeding and feeding outcomes influenced by the needs of the feedlots. Success dictated by the imperatives of season and price incentives.
(C) Breeding and finishing	Still an important sector of the region where properties are large and the country fertile. Reliant on grass finishing with some supplementation to maintain average daily growth rates.	In Qld the steer portion is aimed chiefly at the heavy “Jap Ox” trade. Further south, some finishers will target the domestic market in competition with the feedlots. The average herd size is about 280 head with an estimated range from 60 to 1,200.	This sector most dependent on seasonal conditions due to the period over which the steers are grown and the finish required to achieve target prices eg, 300 kg HSCW at less than 4 years.	Many producers with the ability to finish cattle are going out of breeding to focus on either growing or finishing. This trend driven once again by the feedlots.

Structure and Dynamics of the Australian Beef Cattle Industry

REGION 6: Central Queensland and NW NSW (LMGFT)				
<p>Possibly the best agricultural region in Australia with good soils (by Australian standards) and equitable climate. The region has a large livestock population, including pigs, poultry, sheep and dairy cattle in addition to beef cattle, as well as grain cropping and irrigated cotton. Cattle breeding, growing and finishing all occur within this region with each activity becoming more specialised according to the mix of natural resources and local infrastructure. The north eastern fringe of the region is tick affected and consequently has a high reliance on Brahman types. However, most of the region is tick free and producers select genetics according to market preferences. Due the high number of cattle movements in and out of the area and numerous saleyards it should be considered relatively high risk from a disease perspective. The region takes in the Darling Downs, which is the most intensive livestock area in Australia. Cattle are lot fed for the domestic, Japanese (several) and Korean markets.</p>				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(B) Breeding and growing	Breeding and growing is widespread in Region 6 with the average herd size 400 head and the largest herd running 1,500 breeders. Very few small herds with less than 40 head. Seasonal conditions lead to changes in the age / weight turnoff of steers.	Some steers turned off as weaners but the majority at 2-3 years in late summer and autumn. Most are targeted at the region's large feedlot sector.	Seasonal conditions will determine whether more or less weight is added to steers and cull cows. However, producers will frequently retain cattle longer than they should for cash flow considerations.	With the finishers sending clearer price signals producers are determining breeding and feeding strategies relative to target markets. Climate variability with long periods of drought is making it difficult for some producers to survive.
(C) Breeding and finishing	Breeding and finishing still an important sector on better classes of country. Average herd size about 350 head with a range from 50 to 1,500 head. Steers comprise up to three age groups and are supplementary fed to assist the finishing process.	In good seasons the major turnoff is directed at "Jap Ox" market with smaller steers going to the local market. Cull cows directed at the US market. The slaughter markets for all turnoff are located in south-east Queensland (eg, Murgon, Kilcoy, Dinmore, Beenleigh in region 5 and Toowoomba in region 6)	Finished cattle are turned off in groups with relatively tight weight ranges. Seasonal conditions dictate the number of cattle that achieve specification and top prices.	This is a very traditional sector in Central Queensland. Expansion in Integrated Beef Production will see some of this country converted to specialist growing and finishing. Supplementation important.
(E) Specialised growing and finishing on pasture	Mostly well grown young male cattle with no more than 50% <i>Bos indicus</i> . This sector confined to better quality country that can grow	Sold in even lots throughout the year as the cattle achieve target weights and finish. Paddock condition influences the proportion	Steers that achieve target weight and condition are sold direct to works. Animals that are assessed as poor performers are culled early and sold	Some of the grass country traditionally used for finishing is now used for growing out prior to the cattle entering a feedlot. Pasture finishing is highly intensive and

Structure and Dynamics of the Australian Beef Cattle Industry

	<p>green feed and forage. Cell grazing principles popular with these producers. Average head size about 400 head with relatively little variation around this figure.</p>	<p>of the steers that are retained for finishing. The slaughter markets for all turnoff are located in SE Queensland as for sector C.</p>	<p>through the local saleyards. Early turnoff will also be prompted by any deterioration in the season.</p>	<p>remains important in the better classes of country that can grow high protein feed. Difficulties with cereal cropping in recent dry years has resulted in some producers growing and finishing approx. 50,000 steers on a large scale during the autumn-spring period on winter crops and natural pastures in the lower Bogan and Macquarie river valleys of NSW (Parry and Parry 2005)</p>
--	---	---	---	--

Structure and Dynamics of the Australian Beef Cattle Industry

<p>(F) Specialist finishing in feedlot</p>	<p>Mostly young male cattle with no more than 40% <i>Bos indicus</i> - although this is not strictly observed in practice. The largest concentration of feedlots is on the Darling Downs with standing capacities up to 75,000 head. Turnover depends on target market. Good results depend on a high level of integration with breeding, growing and backgrounding.</p>	<p>Markets range from highly marbled Kobe beef (fed for >300 days) to short fed domestic market (< 70 days). Feedlots turn-off finished cattle throughout the year since maintaining high utilisation of capacity through time assists operational efficiency and economics. Feedlots currently directing most of their turnoff into the export market to capitalise on the strong demand in North Asia.</p>	<p>Turnoff governed by the specifications of the various target markets. Providing the entry cattle have the right genetics and preparation they should meet specifications. For a given lot, economics are determined by price margins and feed costs. Whole of feedlot economics determined by utilisation of capacity and ‘market mix’ – currently biased in favour of export – due to demand in Japan and Korea following US / BSE event.</p>	<p>Feedlotting is increasingly the preferred method of finishing cattle since it increases the chances of meeting market specifications – especially where meat quality determines unit price. Strength of the sector has been assisted by widespread drought over the past decade and the general strength of the international meat market. Corporate producers and abattoirs attracted to feedlot ownership due to its contribution to integration.</p>
---	--	--	---	--

REGION 7: New England (LGFT)				
<p>This tablelands region in northern NSW varies from 800 to 1500 metres above sea level. Summers are cool relative to surrounding regions and winter sees night temperatures below zero on many occasions. Several falls of light to moderate snow are recorded on the higher country each winter. The topography of the region excludes cropping and only limited fodder conservation is practised. Native pastures are of low productivity except on areas of basalt derived soil, however intensive pasture improvement programs have raised productivity considerably. Beef production is generally conducted alongside wool production with some medium term switching between enterprises depending on market trends. A, B and C are the major beef production sectors with overlap between the sectors as prices and seasons dictate. There are several large feedlots in the region targeting the B3 Japanese market. Herd management is at a high level and a large number of seed-stock herds are found in the region. Glen Innes is a major seed-stock market. Buying and pasture finishing steers is carried out by some properties on an opportunistic basis.</p>				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(A) Specialised breeding	Herds in the region are self-replacing of predominately pure-bred British breeds with approx. 30% crossbred. Av. herd size is 400 breeders but individual herds are as large as 3000 breeders.	Herds in this sector are late winter/spring calving and weaners are sold the following autumn, generally at large (3000 head) weaner sales. Weight at sale is season dependant and can range from 200 to 300+ kg. Heavier calves are sought by feedlots feeding for the domestic market.	Prolonged drought conditions can lead to a reduction in cow numbers and this transfers to reduced calf numbers in subsequent years. Seasonal conditions during spring/summer influence the weight of sale calves.	The emergence of a strong feedlot sector has swung many breeders from breeding/finishing to specialised breeders as a safer alternative given unpredictable seasons. Export feedlots targeting high marbled markets has seen a swing towards the Angus breed in preference to Herefords in the region.
(B) Breeding and growing	As for Sector A.	Sale cattle are turned off as yearlings before the second winter at 350 to 400 kg usually direct to feedlots, either locally or to adjoining regions.	As for Sector A.	The emergence of feedlots has made breeding/growing an attractive market opportunity for many producers. This has also brought about a greater focus on meat quality factors and improved management practices.

Structure and Dynamics of the Australian Beef Cattle Industry

<p>(C) Breeding and finishing</p>	<p>Similar herd composition to Sectors A and B with average herd size some 20% smaller. Herds in this sector are run on more fertile country. Increased stocking capacity due to season is adjusted by buying/finishing feeder steers on an opportunity basis.</p>	<p>Producers aim to turn off steers at 450-550 kg mainly during the summer period but turnoff can be spread from spring to autumn, with only limited opportunity for crop finished steers to be turned off during winter. Product is destined for the local market and is processed at abattoirs at Inverell (Region 7), Casino or Ipswich (5).</p>	<p>Producers targeting this production sector are on more fertile/higher rainfall country and turn-off is more predictable than for sectors A and B, however, drought conditions can affect turnoff patterns</p>	<p>General movement away from breeding/finishing towards sectors A and B as a result of feedlot influence.</p>
<p>(F) Specialist finishing in feedlot</p>	<p>The feedlot industry in this region, although relatively small, is very specialised, feeding long-term cattle for the Japanese B3 market.</p>	<p>Feedlots aim to turn-off finished cattle at 350kg HSCW throughout the year. Product is destined for the Japanese market</p>	<p>Although feedlot loading can be influenced by the price of both feeder cattle and the price of feed grains, the Rangers Valley Feedlot is vertically integrated supplying company owned retail outlets in Japan.</p>	<p>The focus of feedlots on meat quality has seen clear signals emerge as to preferred breeds and pre-entry management strategies.</p>

REGION 8: Temperate SE Coast and Tablelands (LGT)				
<p>This is a diverse region ranging from sea-level coastal country, through tableland to alpine topography above 1500 metres, with several large population centres including Sydney, Newcastle, Wollongong and the national capital. Much of the immediate coast is residential/tourist focused with livestock production being more confined to the higher country. Beef production in the region is now largely focused on the production of weaner or feeder steers, with unpredictable seasonal conditions making breeding and finishing a high risk enterprise. Traditionally the southern portion of this region targeted specialist finishing on pasture (sector E) but increasing land values of the more productive country and competition with feedlots for feeder steers has seen this sector move towards redundancy over the last decade. Major weaner sales are held during autumn in a number of centres, with a wide dispersion to other regions.</p>				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(A) Specialised breeding	Breeding herds are self-replacing British breed herds with a 50:50 purebred:crossbred mix. Average herd size is 350 breeders, ranging up to 1200 breeders in the southern part of the region.	Weaner calves are sold in autumn to avoid a winter setback. Average weight at sale is season dependant, ranging from 180 to 250 kg.	Seasonal conditions largely dictate turn-off patterns as a reflection of the number of breeding cows run from year to year and as a reflection of the sale weight and target market of weaners.	Value-based marketing and development of the feedlot industry are the drivers of this production sector, providing more stability in market opportunities regardless of season
(B) Breeding and growing	Similar to Sector A but average herd size is smaller reflecting the higher carry over of steers through winter.	Store steers are turned off at weights averaging 350kg during autumn before the onset of winter stress conditions.	As for Sector A.	As for Sector A.

REGION 9: Temperate Slopes and Plains (MGFT)				
This region comprises the temperate slopes and plains of southern NSW and northern Victoria. The region is characterised by high summer temperatures, low summer rainfall, a mixture of cropping and livestock enterprises and a well developed marketing, feedlot and transport infrastructure. Beef production covers all six production sectors with some interchange between sectors A,B,C, D and E depending on season and market opportunities. Fodder conservation is widely practised. Production sectors A and B are growing in importance as feedlot capacity in the area has increased. Herd management is generally of a high level, however, some larger herds in the western section of the region tend to have less disciplined joining and calving strategies. A large number of seed-stock herds are located in the southern portion of the region and nearby Wodonga is a major seed-stock market for some breeds. Buying and pasture finishing yearling steers is carried out on an opportunistic basis.				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(A) Specialised breeding	Self replacing herds, average herd size of 150 breeders, ranging up to 500 breeders with a late winter/early summer calving pattern.	Turn-off is typically in autumn to avoid carrying weaners over winter.	Seasonal conditions from calving to weaning influence the weight and condition of weaners at sale. Drought conditions can reduce cow numbers and influence the number of weaners for sale in following years.	Development of an active feedlot sector has provided stability to market options and for this sector, with producers focusing on marketing to specification.
(B) Breeding and growing	Self replacing British breed herds with an average herd size of 250 breeders being run on more productive land than breeders targeting Sector A.	Turn-off is focused on spring however there is some turnoff in autumn in unfavourable seasons.	Feedlot demand for 350-380 kg feeder steers influences turnoff strategies for this sector, particularly breeders targeting the high quality B3 Japanese market.	As for Sector A – with a swing from weaner producing to feeder steer production over the last 10 years.
(C) Breeding and finishing	Self replacing British breed herds with an average breeding herd of 150 cows being run on superior country to Sectors A and B.	Turn-off is mainly summer following a winter/spring growing season. Average weight at turn-off is 450-559 kg.	Failure of a winter/spring break can result in these steers being sold as feeder steers unless supplementary feeding is carried out.	This sector is diminishing in importance as producers move towards targeting feedlot supply.
(D) Specialised growing and backgrounding	A sector of increasing influence as the feedlot sector has developed. Essentially purebred/crossbred British breeds with an average herd size of 300 breeders ranging to 1000 breeders.	Turn-of is targeted towards spring but as more turn-off is bred to contract, turn-off reflects feedlot demand.	Producers targeting this sector are rewarded for reducing factors influencing turn-off patterns and fodder conservation is widely practised as a buffer against unfavourable seasons.	The feedlot industry drives this sector completely.

Structure and Dynamics of the Australian Beef Cattle Industry

(E) Specialised growing and finishing on pasture	A small sector in its own right but many producers move in and out of the sector on an opportunity basis.	Turn-off is targeted towards spring following favourable winter/spring growing conditions and is destined for the local market.	Seasonal conditions can influence turn-off but specialist producers use fodder conservation and/or supplementary feeding to buffer against adverse seasons.	As this sector directly competes with the feedlot sector for feeder steers, the sector has become less important as breeders move towards supplying feedlots rather than finishing.
(F) Specialist finishing in feedlot	This is a strong sector with a standing capacity of some 200,000 head. Both domestic and export feedlots operate across the sector providing a diversity of market options to breeders from other sectors.	Turn-off is spaced across all months of the year. Output is largely processed by local abattoirs and is destined for either the local domestic market or the Japanese market.	Price and availability of feeder steers and feed grain, as well export prices, influence this sector significantly. However, most export feedlots are vertically integrated operations feeding to contracted markets.	The focus on eating quality that has developed over the last decade or so is a key driver of this sector, with most output being produced to tight market specifications.

Structure and Dynamics of the Australian Beef Cattle Industry

REGION 10: Mediterranean (MGT)				
<p>This region has a modified Mediterranean climate with predominantly winter rainfall and hot, dry summers. Good spring growing seasons can lead to high summer fuel loads and the risk of widespread destruction of pasture by fires. Livestock production is generally mixed cattle and sheep enterprises while fodder conservation is widely practised for feeding out during winter. Beef production focuses on the production of weaner and feeder steers with some pasture finishing if seasonal conditions are favourable. The region has good market and transport infrastructure with several large population centres on the coast. Major weaner sales are conducted at a number of centres during autumn. The region supports a large number of seed-stock herds. Buying and pasture finishing steers is carried out on some properties on an opportunistic basis if seasonal conditions are favourable.</p>				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(A) Specialised breeding	Self-replacing British breed herds, average 250 breeders ranging to 400 breeders.	Turn-off is targeted for late summer early autumn, generally via special weaner sales at major centres.	Prevailing seasonal conditions from calving to weaning influence sale weight of calves. There is a trend towards spring calving to avoid less favourable winter conditions post calving.	Focus on meat quality defines breed choice and management strategies. Availability of feedlot market options is also driving change.
(B) Breeding and growing	Similar to Sector A	Turn-off is spring and summer as feeder steers for feedlots or for growing out during winter and finishing in the spring/summer by finishers, usually on an opportunity basis.	As for Sector A – wet winters can set cattle back and feeding conserved fodder is routine practice.	As for Sector A
(C) Breeding and finishing	Similar to Sector A	Turn-off is targeted for summer following the spring break and before hot, dry summer weather prevails.	As for Sector B	As for Sector B
(E) Specialised growing and finishing on pasture	This sector is largely confined to mixed livestock operations where purchased weaner/yearling steers are finished on pasture. Average herd size is 250.	Turn-off is winter/spring and summer	This sector competes with the feedlot sector for feeder cattle and high feedlot demand can make this sector less profitable and so is often carried out as an opportunistic activity.	As for sector B

Structure and Dynamics of the Australian Beef Cattle Industry

REGION 11: Tasmania (MGT)				
This island region is a self contained livestock production and marketing system although some movement of feeder and slaughter stock to the mainland occurs if season and market conditions are favourable. The region has a varied topography, ranging from fertile valleys to rugged wilderness country to the west. Rainfall varies from 600mm on the east coast to over 1600mm on the west coast. Livestock production is mixed beef/sheep on improved pastures and is confined to the eastern and northern areas of the island. Beef production is mainly confined to weaner and store production with some pasture finishing dependant on seasonal conditions. A 16,000 head capacity export feedlot provides a ready market for steers produced in the region.				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(A) Specialised breeding	Self-replacing British breed herds averaging 200 breeders, ranging to 400 breeders.	Turn-off of weaners is targeted for autumn.	Seasonal conditions influence turn off weight	Value based marketing is focusing breeders' attention on breed choice and management strategies.
(B) Breeding and growing	Similar to Sector A.	Turnoff of yearling cattle is aimed for spring/summer.	As for Sector A.	As for Sector A.
(E) Specialised growing and finishing on pasture	Herds on the more fertile country are specialising in growing and pasture finishing purchased weaner/yearling cattle.	Turn-off aims at spring/summer following favourable seasonal conditions.	As for Sector A.	As for sector A.
(F) Specialist finishing in feedlot	The feedlot industry in this region is represented by a single vertically integrated feedlot supplying company owned retail outlets in Japan.	Turn-off is throughout the year	A stable supply /demand situation only marginally influenced by grain prices and retail demand in Japan.	Meat quality factors.

Structure and Dynamics of the Australian Beef Cattle Industry

REGION 12: South West WA (MGT)				
<p>This region is a largely self-contained production system with predominant winter rain and hot, dry summers. There is some movement of cattle from Region 2 to markets and feedlots in the region. Livestock production ranges from highly improved country in the more temperate areas of Esperance and the s/w corner (600-800mm rainfall) to drier areas (<500mm rainfall) towards the n/e margin of the region where cropping is widely carried out. Beef production covers all production sector classification with an interchange between sectors A, B,C and D as seasons and markets dictate. The feedlot industry is well developed and having an increasing role as both a market for regional cattle and for driving change towards value based marketing.</p>				
SECTOR	HERD STRUCTURE	TURNOFF PATTERNS	FACTORS INFLUENCING TURNOFF	DRIVERS OF CHANGE
(A) Specialised breeding	Self-replacing herds averaging around 200 breeders with some larger herds up to 2,000 breeders. Mostly British breeds but some <i>Bos indicus</i> influence in the north western part of the region.	Turnoff is aimed for summer following an autumn calving.	Seasonal conditions influence the sale weight of weaners.	As for other regions, the focus of consumers on meat quality factors and the availability of feedlots to provide optimum nutritional environment regardless of season.
(C) Breeding and finishing	Similar herd structure to Sector A with herds being run on more productive country to allow finishing.	Turnoff of yearlings aimed for spring/summer mainly for the local “baby beef” requiring a carcass weight of 180 to 240 kg.	Seasonal conditions influence weight and condition of sale stock – during adverse seasons some stock destined for pasture finishing would be finished in feedlots.	As for Sector A
(E) Specialised growing and finishing on pasture	This sector has lessened in importance as feedlots have developed however some buying and finishing occurs in more fertile areas or as seasonal opportunities occur.	Turnoff is aimed for autumn and spring	Adverse seasonal conditions influence ability to stabilise weight and condition, however, most producers would feed conserved fodder to stabilise turnoff. Competition with feedlots for feeder steers creates supply fluctuation from year to year.	As for sector A
(F) Specialist finishing in feedlot	The region has a well developed feedlot industry of some 90,000 head standing capacity. Some supplies of feeder steers are sourced from Region 2.	Turnoff is throughout the year	Availability and price of both feeder cattle and fed grain influence feedlot viability and can create seasonal fluctuation in feedlot loading.	Feedlots are becoming the preferred method of supplying the retail market with product of consistent eating quality regardless of seasonal influence.

Supplementary Notes - Southern regions (Regions 7,8,9,10,11 and 12)

Beef production across the southern regions is complex because beef production is not the primary source of farm income and well developed transport, and market infrastructures allow considerable flexibility in production and marketing strategies with overlap between sectors B,C and D depending on season and market dynamics. Herds are self-replacing with some PTIC heifers being traded as required to re-build/expand herds but not as a normal activity. Similarly, the specialist finishing on pasture (Sector E) and specialist backgrounding (Sector D) are largely opportunistic sectors influenced by the supply/demand for feeder steers by the feedlot sector.

6. Cattle Population

Both the Australian Bureau of Statistics (ABS) and the Australian Bureau of Agricultural and Resource Economics (ABARE) conduct regular surveys of agricultural industries. ABARE only surveys the broadacre and dairy industries and the sample has been about 1,400 farms in recent years. The Sample is selected to provide reliable estimates of farm financial performance at ABARE region level. Both ABS and ABARE surveys have a similar stratified random sampling design but ABARE has a bias towards larger production units and aims to have low relative standard errors on major financial variables (less than 10 per cent).

For the purpose of reporting regional level data, this study utilised ABS survey data. The ABS gathers census data every five years and survey data in the intervening years for all rural industries. ABS Commodity Surveys report populations at a point in time and volumes (such as sales) for the financial year. The most recently reported survey by the Australian Bureau of Statistics (ABS) was in June 2003 and covered the 2002–03 financial year. A sample of 28,000 establishments was used. In general, an agricultural establishment covers all operations at a particular location but may comprise a group of locations within the same Statistical Local Area (SLA) or contiguous SLAs. The majority of establishments operate at one location only. All ABS data on meat cattle and holdings, stratified by 33 ABARE regions, were purchased for agricultural establishments with an Estimated Value of Agricultural Operations (EVAO) exceeding \$22,500.

Although the data includes estimated sampling errors, only point estimates of property and cattle numbers are reported in this study. ABS reported that the sampling variability in the survey estimates (the relative standard error of the estimate) for total meat cattle ranged from 2.9 to 4.5% among the states (Source: ABS Agricultural Commodities, 7121.0, 2002-03).

The ABS data sets for the Northern Territory ABARE regions (711-714) differed from those for the rest of Australia in that they provided numbers of cows and heifers over two years of age (2yo) in addition to the numbers over 1yo. Animals over 2yo are of particular interest as they represent adult animals. Therefore, this data was estimated for the rest of Australia using the age structures reported by ABARE for northern and southern Australia from Table 7. The proportion of cows and heifers over 2yo among those that were over 1yo was 0.815 for both northern and southern Australia [ie $J/(J+K+L+M)$ in Table 7]. This multiplier was then applied to the ABS data to estimate the numbers of cows and heifers over 2yo in the rest of Australia.

Table 7. Estimated beef herd composition on broadacre properties in 2003
(provisional point estimates in millions; source: ABARE-MLA, Australian Beef Industry 04.1).

	Australia	Northern Australia (a)	Southern Australia (b)
Calves	5.03	2.63	2.40
1–2 yr old replacement heifers (J)	2.04	1.17	0.87
2–3 yr old cows (K)	2.64	1.45	1.20
4–6 yr old cows (L)	4.56	2.63	1.93
7 yrs plus cows (M)	1.76	1.08	0.69
1–3 yr old other cattle	4.36	2.82	1.54
4–6 yr old other cattle	0.24	0.19	0.05
7 yrs plus other cattle	0.07	0.07	0.01
Bulls	0.48	0.28	0.20
Total	21.19	12.31	8.88

Notes:

- a) Northern Australia: Queensland, the Northern Territory and the Pilbara and Kimberley regions of Western Australia.
- b) Southern Australia: New South Wales, Victoria, South Australia, Tasmania and the rest of Western Australia.
- c) Most point estimates had a relative standard error of between 6 and 11 percent.

The classification of Australia into Beef Regions was based largely on ABARE regional boundaries with most ABARE regions allocated to only one Beef Region. However, seven ABARE regions were dissected by the boundary between two Beef Regions as shown in Table 8. Expert opinion was used to estimate the proportions of holdings and of cattle falling either side of these boundaries.

Tables 8 a) and b) Percentages of ABARE regional data for holdings and cattle allocated to various Beef Regions.

a) Holdings	Beef Region					
ABARE Region	1	2	5	7	8	10
511	5	95				
713	40	60				
714	80	20				
311	10	90				
132			90		10	
131				35	65	
231					50	50

b) Cattle	Beef Region					
ABARE Region	1	2	5	7	8	10
511	5	95				
713	35	65				
714	85	15				
311	10	90				
132			90		10	
131				35	65	
231					50	50

These estimates were used to allocate holdings and cattle to the Beef Regions. The numbers of holdings and the structure of the meat cattle populations are summarised by Beef Region in Table 9 and the percentages of cattle holdings and cattle numbers are summarised by Region in Table 10.

The distribution of estimated total meat cattle numbers by region (from Table 9) is summarized graphically in Figure 3.

Figure 3. Distribution of meat cattle by Beef Region (one dot per 10,000 head).

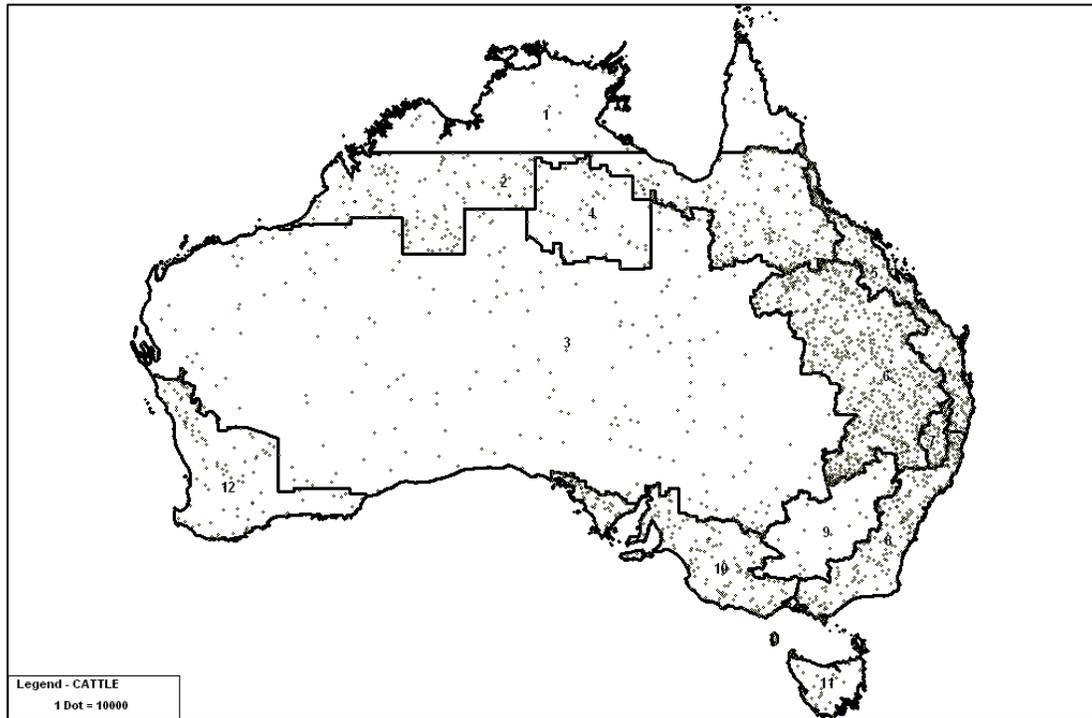


Table 9. Estimated numbers of agricultural holdings and meat cattle on operations with an EVAO over \$22,500 by Beef Region, June 2003 (Source: ABS Commodity Survey, 2003).

Beef Region	Holdings		Meat cattle ('000)					Total meat cattle
	Total	No. with meat cattle	Breeding males	Breeding females over 2 yo	Breeding females 1-2 yo	Calves under 1 yo	Other cattle over 1 yo	
1	177	79	12	214	68	78	67	439
2	1,573	1,040	79	1,644	406	645	726	3,501
3	2,802	1,509	50	1,015	265	387	536	2,253
4	28	26	12	213	90	110	96	521
5	18,778	9,297	71	1,067	242	512	762	2,655
6	25,992	16,901	162	2,705	614	1,580	1,894	6,955
7	2,560	2,079	16	266	60	154	108	604
8	13,478	9,116	53	923	209	571	417	2,173
9	5,959	2,512	7	128	29	70	67	301
10	26,199	9,626	48	825	187	616	394	2,071
11	2,981	1,929	12	168	38	124	116	458
12	10,465	3,705	30	436	99	295	190	1,050
Total	110,993	57,820	552	9,605	2,308	5,142	5,373	22,982

Table 10. Percentage distribution of meat holdings and of total numbers of meat cattle by Beef Region.

Beef Region	Holdings with meat cattle %	Total meat cattle %
1	0.1	1.9
2	1.8	15.2
3	2.6	9.8
4	0.0	2.3
5	16.1	11.6
6	29.2	30.3
7	3.6	2.6
8	15.8	9.5
9	4.3	1.3
10	16.6	9.0
11	3.3	2.0
12	6.4	4.6
	100.0	100.0

7. Aggregations of cattle

The following accessible sources of aggregated data on locations and numbers of cattle at aggregation points were identified (Table 11).

Table 11. Data sources on aggregation points

Aggregation	States & years	Source	Location to Beef Region	No. of Cattle	
				Annual	Month
Feedlots	All states 2004	AUS-MEAT	+	(Capacity)	
Saleyards	NSW & Qld, 2002-2004	NLRS	+	+	
	NSW, Qld, WA, SA, Vic – NLRS reported saleyards 2002-04	NLRS		+	+
	WA – Midland 2002-04	WAMIA	+	+	+
	WA – Other saleyards	WALSA	+	+	+
	WA - Plantagenet	Plantagenet saleyards			
	Tas - estimates	Tas DPIWE	+	+	
	Vic & SA	LSAVic	+	+	
Export Ports	All ports 2002-2004	Livecorp	+	+	+
Rail Depots	Queensland 2004	QRail	+	+	
Agricultural Shows	All States and Territories	State Agricultural Societies Councils or Royal Ag Societies	+		
Abattoirs	Top 25 red meat producers	MLA	+	+/-	

7.1 Feedlots

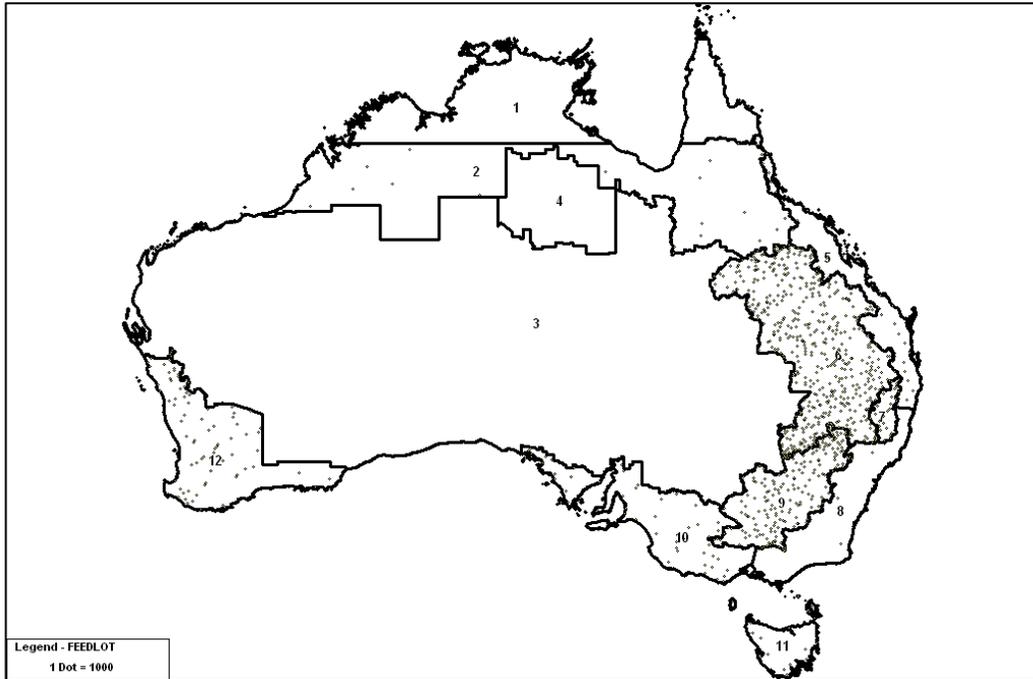
As noted previously, lot-feeding has become a major driver of change in beef production in southern Australia in particular. The location and capacity of cattle feedlots in Australia were provided by AUS-MEAT Ltd. The reported capacity for 2004 was just under 1 million cattle. These data, summarised for each Beef Region, are presented in Table 12 and illustrated in Figure 4. Small feedlots were usually given a default capacity of 49 and their contribution to total numbers is included in the table.

With some notable exceptions, large feedlots are principally clustered in Beef Regions 6, 9, 10 and 12, relatively close to grain supplies. Cunningham et al (2002) have previously plotted the location of feedlots by nearest town.

Table 12. Capacity of cattle feedlots by Beef Region, 2004 (adapted from AUS-MEAT Ltd).

Beef Region	Capacity	No. feedlots	Capacity Range	No. < 50
2	20,049	2	49 - 20,000	1
5	34,139	86	20 - 4,800	43
6	532,734	281	10 - 50,000	38
7	26,000	3	1,000 - 24,000	0
8	3,655	7	100 - 1,000	0
9	206,679	56	40 - 53,333	2
10	48,348	31	90 - 20,000	0
11	16,000	1	16,000	0
12	79,465	84	100 - 8,000	0
Total	967,069	551		84

Figure 4. Distribution of capacity in cattle feedlots by Beef Region (one dot per 1,000 head capacity.)



7.2 Saleyards

There is no single national data source on saleyard location and throughput. Data on location and annual throughput at saleyards was sought for the years 2002 to 2004 and was provided by:

- MLA for Queensland and New South Wales
- Livestock Saleyards Association of Victoria for Victoria and South Australia
- Tasmanian Department of Primary Industries Water and Environment for Tasmania
- West Australian Meat Industry Authority, the West Australian Livestock Saleyards Association and Plantagenet Saleyards for WA.

In addition, MLA's National Livestock Reporting Service (NLRS) monitors livestock sales at selected saleyards across Australia and monthly data for three years was used to identify seasonal selling patterns through saleyards. Monthly data was also available for WA saleyards.

Annual throughput

These data cover the great majority of cattle sales but data for some small saleyards and some large independent yards are not collated by these organisations. For instance, in Beef Region 8 in Victoria, recent data is not available for the large Gippsland selling centres at Korumburra and Warragul that were processing over 100,000 and 60,000 cattle respectively in the late 1990's. Although the throughput of these particular saleyards may have been affected to some extent by the opening of the Victorian Livestock Exchange at Pakenham in 2002, they are still thought to process similar numbers of cattle. Other large saleyards in Gippsland not included are Traralgon and Koonwarra. Dairy cattle probably comprise a significant component of the throughput of these yards.

Given the importance of saleyards as points of potential contact and spread of infections, available data on throughput for each saleyard in the Beef Regions for the three years 2002 to 2004 is presented for reference in Appendix 1.

This best estimate of the average annual throughput (ie the most recent annual figure or the mean of two or three years data where more than one years data was available) was calculated and is presented by Beef Region in Table 13 and Figure 5. Although it does not depict the actual locations of saleyards, the dot density map indicates that the geographical distribution of saleyard throughput is similar among eastern Regions 5 to 10.

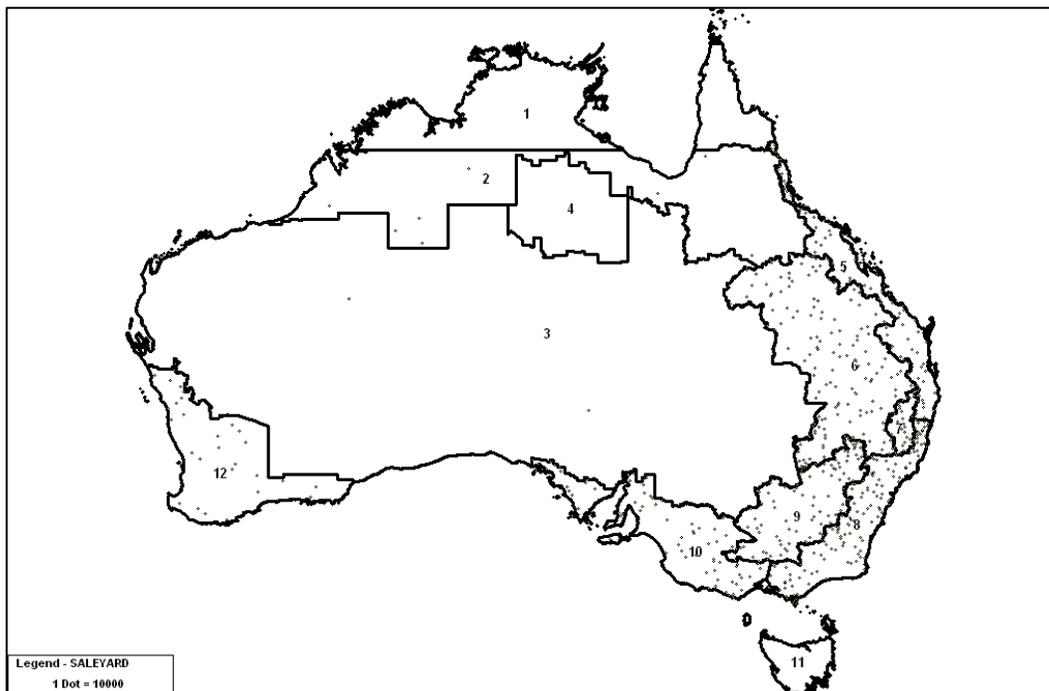
More detailed data on the numbers and types of sales and consignments at the various saleyards is not available in aggregated forms. Such data may be available, subject to

privacy and commercial confidentiality, from individual saleyard operators and livestock agencies.

Table 13. Annual saleyard throughput by Beef Region, 2002-2004 (various industry sources).

Beef Region	No. Saleyards	Estimated average numbers of cattle sold
2	3	98,410
3	1	28,939
5	31	772,017
6	33	1,520,924
7	7	257,395
8	38	1,345,757
9	28	935,207
10	16	720,516
12	9	296,027
Total	166	5,975,192

Figure 5. Distribution of mainland saleyard throughput by Beef Region (one dot per 10,000 head capacity).



Data was not available for individual saleyards in Tasmania (except for one yard reported by the NLRS) but staff of the Department of Primary Industries, Water and the Environment estimated that about 90,000 cattle are sold annually through saleyards in Beef Region 11. Approximately 52,500 cattle pass through the three major saleyards at Bridgewater (near Hobart), Killafaddy (Launceston) and Quoiba (Devonport) annually. A further 8,000 were estimated to pass through smaller saleyards at Cooe and Smithton that sell fortnightly and at Scottsdale, King Island and Ranelagh that sell monthly.

Approximately 28,000 weaners and store cattle are sold at the autumn sales through Powranna, Bothwell, Cleveland (Derwent Valley) and on Flinder's Island. It is estimated that another 2,000 cattle are sold through stud sales but these are mostly on-farm sales. Some of these cattle would be also included in the numbers of cattle exported from Tasmania (Section 7.5)

Seasonal pattern

Monthly throughput data for NLRS (reported sales from January 2002 to January 2005) was seasonalised by categorising the data as follows:

December, January and February – Summer
March, April and May – Autumn
June, July and August – Winter
September, October and November – Spring

As the source data was provided for full calendar years, the “summer” throughput would include data for January, February and December in the same calendar year. Hence the summer seasons cannot be interpreted as being the number of cattle that were sold in any one, two or three actual summers.

A seasonal index was calculated by dividing the seasonal throughputs by the total annual throughput in each Beef Region and expressing the result as a proportion (Table 14).

Two large Queensland saleyards at Roma (Beef Region 6) and Gracemere (Beef Region 5) were not included in calculating the seasonal indices because reporting was discontinued there in 2003 and 2004 respectively. Throughput in northern parts of regions 5 and 6 is affected by wet seasons and NLRS monitored saleyards such as Longreach and Charters Towers may not operate in all months from November to February depending on conditions. Coonamble saleyard in NSW (Beef Region 6) did not hold sales from late 2002 through to June 2003 because of drought.

Table 14. Seasonal indices of numbers of cattle sold through NLRS reported saleyards in each Beef Region (adapted from NLRS)

Beef Region	Average annual throughput	No. NLRS Saleyards	Summer	Autumn	Winter	Spring
2	41,042	1	0.06	0.23	0.34	0.38
5	360,811	6	0.26	0.29	0.22	0.22
6	936,635	13	0.17	0.24	0.28	0.31
7	141,939	2	0.22	0.27	0.27	0.24
8	260,592	5	0.22	0.30	0.23	0.25
9	439,968	5	0.25	0.23	0.20	0.31
10	450,386	8	0.29	0.26	0.19	0.26
11	17,977	1	0.23	0.33	0.21	0.23
12	180,538	3	0.31	0.19	0.21	0.30
Total	2,829,887	44				

7.3 Bull Sales

The main bull sales are held during the middle of the year as the selling centres listed in Table 15 show. Smaller local sales are held in other beef producing districts. Replacement female breeder cattle are sold at weaner or special breeder sales in southern Australia, mainly in the autumn and in northern Australia, mainly in spring. Additionally, breed societies, studs and individual large commercial herds hold special sales.

Table 15. Principal bull selling centres by location and season.

Beef Region	Location	Main source regions	Main destination regions	Approximate number sold			
				Summer	Autumn	Winter	Spring
				Early wet	Late wet	Early dry	Late dry
2	Charters towers	5,6	2,5,6			200	
3	Alice Springs	10	3			100	
5	Rockhampton	5,6	2,3,5,6			1,500	
6	Roma	6,9	6			200	
6	Tamworth	6,7,9	6,7,9				250
7	Glen Innes	6,7,9	6,7,9			400	
8	Wodonga*	7,8,9,10	7,8,9,10,11		400		
9	Dubbo	6,7,8,9,10	6,7,8,9,10,11			300	
9	Dunnedoo	6,7,9	7,8			50	
10	Narracorte	8,9,10	8,9,10,12		300		
11	Powranna	11	11		50		
12	Kojanup	12	12		50		

* Note: Wodonga is located near the boundary of Region 9, which it also services.

7.4 Shows

The Federal Council of Agricultural Councils and the various royal show societies coordinate agricultural shows in Australia. Shows are potentially important sites of animal contact as large numbers of cattle and other livestock (that may also be susceptible to infections of cattle) from various parts of Australia are concentrated on a site for periods ranging from half a day (for a small country show) to several days (in the case of the large royal shows). Cattle sales are also often held at major shows, so some stock move on to third properties and regions following the show.

Data on shows in most states were obtained from web sites operated by the agricultural societies councils in the states. The respective royal agricultural societies provided data on the shows in the Northern Territory and in WA. In southern Australia, most shows are held from February to April and from August to November. In the north, shows are mostly held in the drier middle of the year. The capital city royal shows in each state (and the Launceston Royal Show in Tasmania) are the main shows to which cattle may travel across the state and interstate (Table 16).

Table 16. Timing of shows in the capital cities by Region, 2005.

Beef Region	Show	Month
1	Darwin	Jul
5	Brisbane	Aug
8	Sydney	Mar
8	Canberra	Feb
10	Melbourne	Sep
10	Adelaide	Sep
11	Hobart	Oct
12	Perth	Sep

In addition to these royal shows there are over 560 smaller agricultural shows at which variable numbers of cattle are present. Although there are many small shows, they probably represent a minor risk compared to larger, more frequent and more mobile aggregations such as saleyards. Country shows tend to be held over one or two days and mainly attract local cattle of which the majority return home or to third properties in the local district. For these reasons and because many of the small country shows are difficult to accurately allocate to Beef Regions, their distribution and timing has only been summarised by state, listed from north to south (Table 17).

Table 17. Numbers and month of agricultural shows by State, 2005

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
NT					1	1	3	1					6
QLD	1	6	8	17	36	25	17	8	11				129
WA			3	5	2		1	6	15	17			49
*SA		3	6	1				4	6	24	6	1	51
NSW	11	36	35	29	6			13	33	24	9		196
VIC	3	9	14	4					1	47	27	4	109
TAS		3	3	1	2				1	4	8	1	23
Total	15	57	69	57	47	26	21	32	67	116	50	6	563

* Note: the timing of six SA shows was not available.

7.5 Ports

In the northern tropics in particular, live export has been a major driver of change in beef production. An average of nearly 700,000 cattle were exported annually out of northern ports in the past three years. Livecorp data on live exports of cattle were obtained for 2002-2004 and the number of cattle exported each season is presented in Table 18 for the main ports.

Table 18. Mean numbers of live cattle exported by season from 2002 to 2004 inclusive, from ports exporting an average of 1,000 or more cattle per annum (adapted from Livecorp).

Beef Region	Port	Summer	Autumn	Winter	Spring	Annual
1	Darwin	76,440	64,463	109,032	88,760	338,695
1	Weipa	0	787	871	697	2,355
1	Wyndham	8,851	20,097	21,336	21,777	72,062
2	Karumba	1,100	10,253	12,861	6,777	30,991
2	Broome	14,420	14,598	42,611	37,474	109,103
3	Port Hedland	2,820	0	9,784	10,989	23,593
5	Brisbane	6,178	5,244	6,655	6,964	25,041
5	Cairns	665	342	622	114	1,743
5	Innisfail	650	0	217	598	1,465
5	Townsville	17,865	21,827	23,266	30,151	93,110
10	Port Adelaide	4,822	3,398	5,838	4,536	18,594
10	Melbourne	351	989	117	399	1,857
10	Portland	32,590	14,747	23,991	20,492	91,820
12	Fremantle	61,453	19,324	33,755	43,214	157,748
12	Geraldton	19,175	3,154	6,392	10,787	39,508

Seasonal indices were calculated in the same way as for NLRS saleyards (Table 19).

Table 19. Seasonal indices of live cattle exports for each Beef Region.

Beef Region	No. Ports	Summer	Autumn	Winter	Spring
1	3	0.21	0.21	0.32	0.27
2	2	0.11	0.18	0.40	0.32
3	1	0.12	0.00	0.41	0.47
5	4	0.21	0.23	0.25	0.31
10	3	0.34	0.17	0.27	0.23
12	2	0.41	0.11	0.20	0.27

Relatively small numbers of cattle were also exported over the three year period from:

- Brisbane Airport (in Beef Region 5) 776 head
- Sydney (8) 522 head
- Port Kembla (8) 847 head
- Melbourne Airport (10) 1,709 head
- Devonport (11) 16 head.

7.6 Rail heads in Queensland

Queensland has the only railway network in northern Australia and rail transport of cattle in states is now rare. Over recent years, an annual average of about 400,000 cattle were transported by rail to southeast Queensland for restocking or for slaughter. Table 20 presents the number of cattle and the number of trains per week provided by Queensland Rail (averaged over three years 2002-2004). Most movements take place during the dry season from May to August.

Table 20. Average numbers of cattle railed from railheads in Queensland, 2002-2004 (adapted from Queensland Rail).

Beef Region	Location	Average Annual No. cattle	Trains per week
2	Hughenden	7,646	
2	Julia Creek	41,238	2
2	Richmond	11,160	
2	Wellington (Charters Towers)	29,074	1
3	Brodie (Cloncurry)	45,906	3
3	Bungalien	1,296	
3	Malbon	2,344	
3	Mirri (Nth Phosphate Hill)	8,248	3
3	Mt Isa	24,536	2
3	Quilpie	39,168	4
3	Winton	31,208	3
5	Bloomsbury	1,016	
5	Gracemere	2,525	
5	Stuart (Townsville)	6,892	
6	Alpha	2,903	
6	Clermont	63,592	3
6	Cramsie (Longreach)	21,352	2
6	Emerald	22,764	
6	Moura	1,144	
6	Yumborra (Dalby)	36,296	1
6	Zamia (Springsure)	5,560	
	Total Annual No. Cattle	406,536	

7.7 Abattoirs

Attempts to obtain comprehensive aggregated data on the number of cattle slaughtered at individual abattoirs across Australia were not successful. Commercial confidentiality has restricted data collection and/or dissemination by industry organisations and government authorities.

Cunningham *et al* located and plotted Australian abattoirs by postcode in 2002. The only data source identified on abattoir throughput was MLA's annual publication of the 25 largest red meat producing companies in Australia in their magazine, *Feedback*. In 2003, these companies accounted for about three-quarters of red meat production. Three of the top 25 companies produced no beef and there was no other information for three others that had not confirmed MLA's data (MLA, August 2004). The published information for the other 19 companies was analysed to produce Tables 21 and 22 that report the location of their 32 beef slaughtering abattoirs.

Given that Australia produces approximately 2 million tonnes of beef and veal carcass meat annually (MLA, 2004), it is estimated that these abattoirs produce between 70% and 75% of the nation's beef and veal. The average carcass weight of cattle slaughtered in Australia in 2003 was 230kg (ABARE, December 2004). Assuming this average across these abattoirs would equate to about 6.4 million head of cattle slaughtered. There are also many other small abattoirs around Australia that largely slaughter locally acquired cattle.

Table 21. Distribution of 32 beef abattoirs owned by the top red meat producers by Beef Region (adapted from MLA)

Beef Region	No. abattoirs
5	14
6	3
7	1
8	3
9	5
10	3
11	1
12	2

Table 22. Estimated tonnes of carcass weight processed and locations of beef abattoirs owned by the top red meat processors in 2003 (MLA 2004).

Meat Company	ETCW 2003 (000' tonnes)	Beef % * incl veal	ETCW Beef	Beef abattoirs operating in 2003	Beef Region
Australian Meat Holdings	400	100%	400	Dinmore Rockhampton Beef City Townsville	5 5 6 5
Nippon Meat Packers Aust Pty Ltd	170	100%	170	Mackay Oakey Wingham	5 6 8
Teys Brothers (Holdings)	167	100%	167	Beenleigh Biloela Innisfail Katherine Naracoorte Rockhampton	5 5 5 1 10 5
Cargill Foods Australia	120	100%	120	Tamworth Wagga Wagga	6 9
Bindaree Beef	97	100%	97	Inverell Murgon	7 5
T&R (Murray Bridge)	72	50%	36	Murray Bridge	10
Midfield Meat International	65	60%	39	Warrnambool	10
Rockdale Beef	53	100%	53	Yanco	9
Australian Country Choice*	52	100%	52	Cannon Hill	5
HW Greenham and Sons	51	100%	51	Smithton Tongala	11 9
EG Green and Sons	47	100%	47	Harvey	12
Kilcoy Pastoral Co.	42	100%	42	Kilcoy	5
Northern Cooperative Meat Co.*	42	80%	33.6	Casino	5
G & K O'Connor	38	100%	38	Pakenham	8
Valley Beef Co.	37	100%	37	Gatton	5
G & B Gathercole (Vic)	35	25%	8.75	Carrum Tatura	8 9
Queensland Beef Processing Co.	34	100%	34	Coominya	5
V and V Walsh	32	70%	22.4	Bunbury	12
Norvic Food Processing	31	55%	17.05	Wodonga	9
			1,464.8		

8. Expert opinion on the “Typical Beef Herd”

Data on movements of livestock throughout Australia are not yet generally available. The National Livestock Identification Scheme (NLIS) is still in its adolescence, although identification of all cattle leaving properties will become mandatory in all states from July 2005 and movements onto second properties will be recorded in the NLIS database from July 2006 for all states (MLA May 2005). An electronic traceability capacity has been proposed but there is currently no national or state register of cattle movements. The major stock and station agencies have advised that they record movements by the type of destination (eg abattoir, feedlot) and are now developing information systems to assist them in tracking animal movements on a geographic basis.

As well as information on movements, the project also aimed to collect data on typical farm management practices (such as mustering and supplementary feeding) as they related to risk factors for the transmission of an emerging animal disease. Expert opinion was sought on the “typical beef herd” in the relevant Production Sectors in each Beef Region and the cattle movements and management practices. Given the absence of hard data on movements in particular, the concept of the “typical beef herd” was developed with OCVO staff to try to capture normal practice and movements in each region. It can be argued that a typical herd in one part of a region is not the same as a typical herd in another part of the same region. However, the “typical beef herd” in each region is a concept used to facilitate subjective description of what typically occurs and what could be expected to occur in the event of a major disease outbreak affecting beef cattle. This information (and additional movement data collected) reflects the experts’ opinions of what they consider a “typical herd” for each region and sector and this needs to be borne in mind when extrapolating to the wider beef industry. There may be inconsistencies between the foregoing data and what follows.

Following agreement with OCVO staff on the information to be collected, a draft questionnaire was pre-tested on people with a good understanding of the beef cattle industry. The questionnaire was refined during this period and experts in each region were interviewed by telephone using the standard questionnaire.

The questionnaire had five sections:

- A. Demographics (6 questions)
- B. Feeding practices (3)
- C. Mustering practices (2)
- D. Movements on (3)
- E. Movements off (7)

The responses to Sections A, B and C and those regarding seasonality and destinations for movements to agistment (section E) are tabulated by Beef Region and Production Sector in Appendix 2 and summarised under the section headings following. Movements

within and between regions (Sections D and E) are mainly summarised by maps in Figures 6 to 10.

8A. Demographics

Genetic types of cattle

The breed composition of the typical beef herd is summarised for each region and sector in Table A2.1. In northern Australia, herds typically comprise *Bos indicus* or *Bos indicus* crosses, while southern Australian herds are almost exclusively *Bos taurus* breeds. Crossbred cattle however are relatively common throughout Australia.

Cows

The number of beef cows and the age-structure of cows in typical herds for each region and sector are summarised in Table A2.2. Generally, 60-70% of cows in typical herds were ≤ 6 years of age, and the maximum cow age ranged from 8-10 in the south up to 12-16 in the north.

Bulls and steers

The number of beef bulls and steers and the age-structure of bulls and steers in typical herds for each region and sector are summarised in Table A2.3. As with cows, 60-70% of bulls were ≤ 6 years of age. The maximum bull age ranged from 6 to 10 and tended to be higher in the north. Most steers were sold or slaughtered before they reached 3 years of age, although some older steers, up to 4 years old, were recorded in the north.

8B. Feeding practices

Feeding practices for each region and sector are summarised in Tables A2.4 and A2.5. Other than feedlots, only a low percentage of typical producers in some regions and sectors feed processed feed.

8C. Mustering practices

The frequency of mustering for each region and sector is summarised in Table A2.6 and the seasonality of management activities is summarised in Table A2.7 for each region and sector.

8D. Movements on

The percentages of animals introduced to the typical herd (as a percentage of the numbers of animals of that type recorded in Tables A2.2 and A2.3) and the numbers of consignments introduced are summarised by animal type for the typical property for each region and sector in Table A2.8. For most regions, bulls were the main animal type introduced, with steers also introduced for the growing and finishing sectors. Cows and heifers were only routinely introduced in Sectors B and C in Regions 6 and 9.

Additional data on the source region and the type of source (saleyard, independent property or other owned property) were also collected for each region and sector but have not been included in this report because of the complexity of the data. These data are reported separately in electronic format.

The total number of consignments of bulls and steers introduced for each region and the regions of origin was extrapolated from Table A2.8 and the break-up of consignments by source region (data not shown) and the estimated numbers of properties in each sector and region presented as maps in Figures 6 and 7. These maps portray the relative number of consignments of bulls and steers moving within and between regions, with the arrows representing the direction of movement and the base of the arrow proportional to the number of consignments. Data for feedlots was excluded from movements for steers because of the complexity and volume of these movements. These data are reported separately in electronic format.

Figure 6: Relative numbers and flow of consignments of bulls moving onto properties within and between regions.

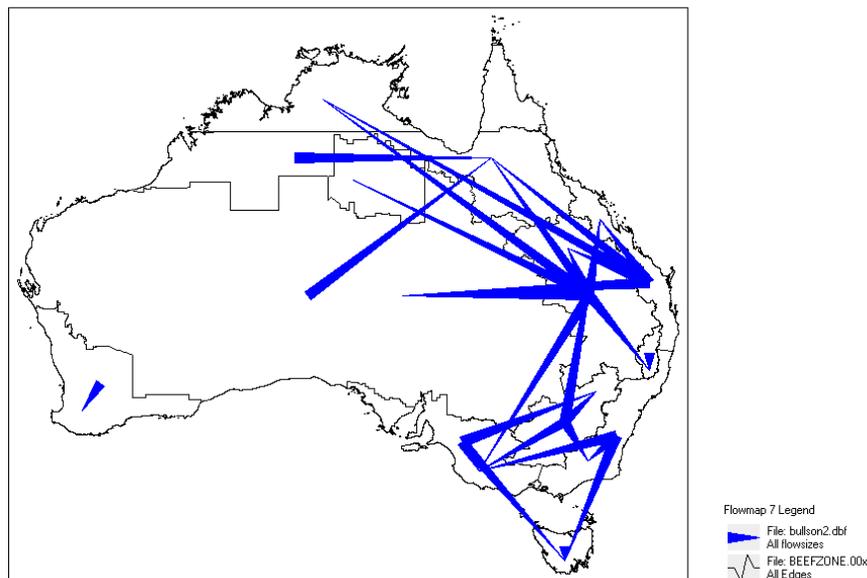
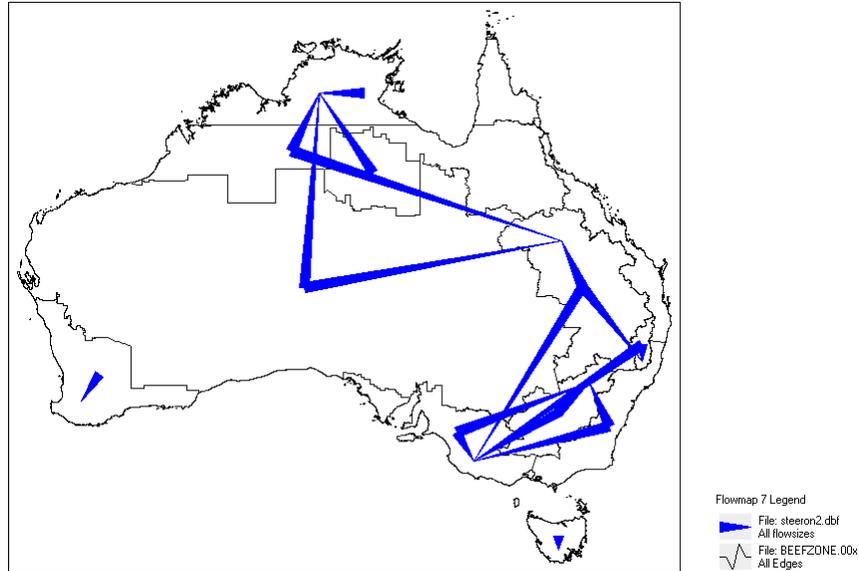


Figure 7: Relative numbers and flow of consignments of steers moving onto properties within and between regions.



8E. Movements off

The percentage of animals moved off and the number of consignments moved off are summarised by animal type for the typical property for each region and sector in Table A2.9.

Additional data on the destination region and the type of destination (saleyard, abattoir, independent property, export, etc) were also collected for each region and sector but have not been included in this report because of their complexity.

The total number of consignments of cows, breeding heifers and steers moved off for each region and the regions of destination was extrapolated from the table and the break-up of consignments by destination region (not shown) and the estimated numbers of properties in each sector and region presented as maps in Figures 8, 9 and 10. These maps portray the relative number of consignments of cows, breeding heifers and steers moving within and between regions, with the arrows representing the direction of movement and the base of the arrow proportional to the number of consignments. Data for feedlots were excluded from the steer movements because of the complexity and volume of the movements and the fact that all movements were to abattoirs.

Figure 8: Relative numbers and flow of consignments of cows moving off properties within and between regions.

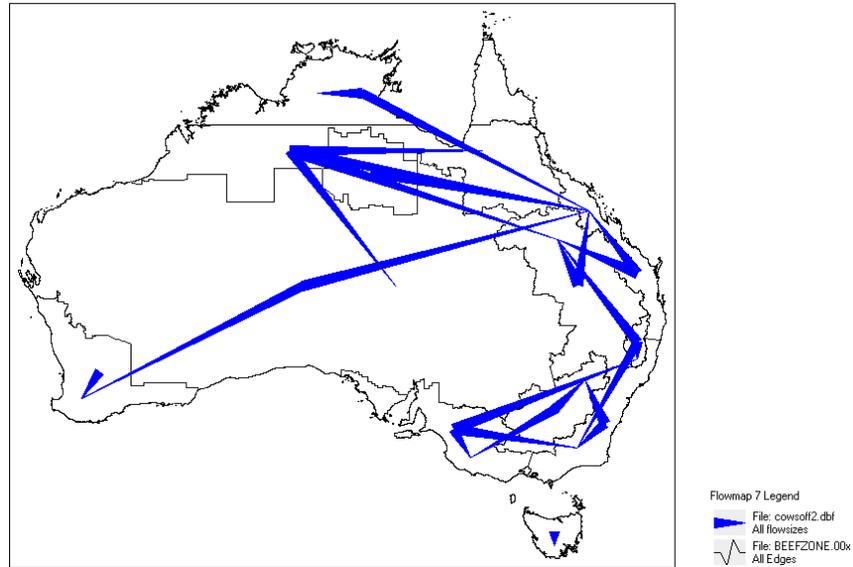


Figure 9: Relative numbers and flow of consignments of breeding heifers moving off properties within and between regions.

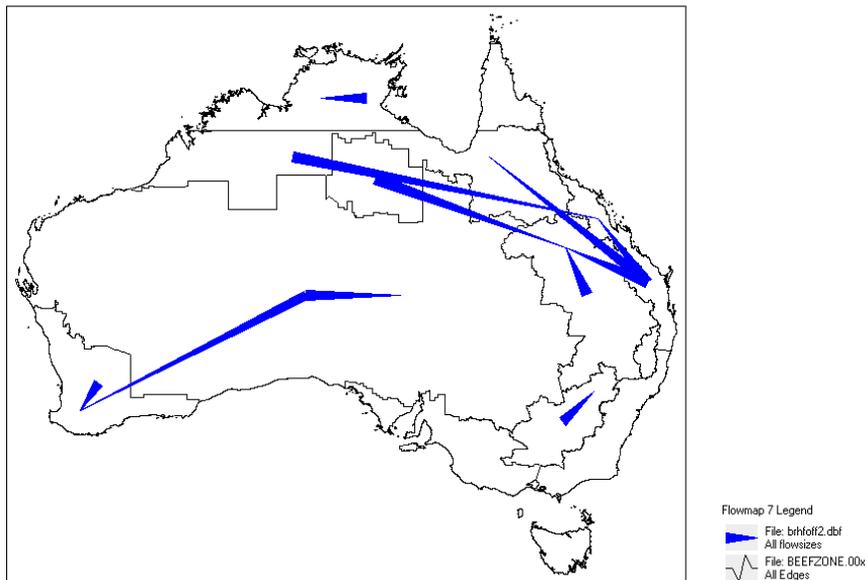


Figure 10: Relative numbers and flow of consignments of steers moving off properties within and between regions.

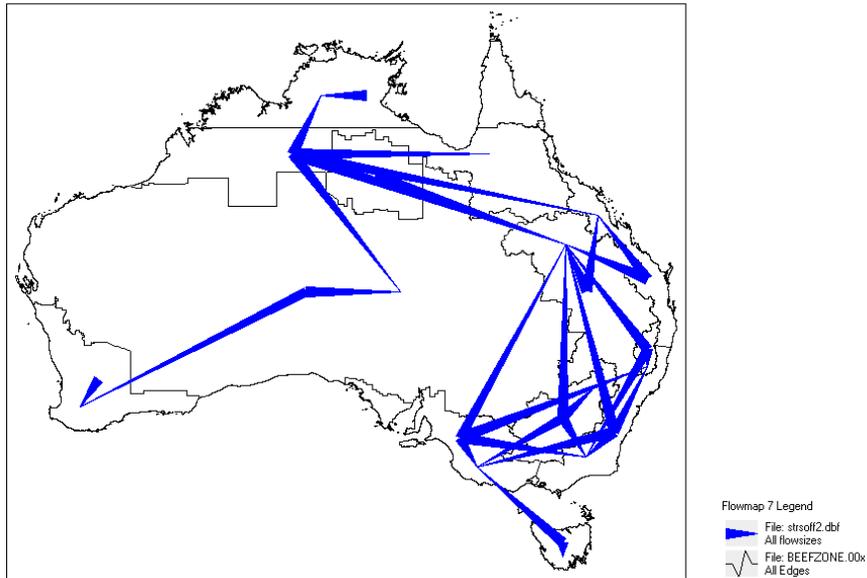


Table A2.10 summarises the percentage of typical producers in each region and sector who send cattle on agistment at specified frequencies. For all regions and sectors, typically most producers either never use agistment or use it during drought only. Very few typical producers use agistment as part of their normal routine.

Table A2.11 summarises the destination regions and seasons during which cattle are typically sent to agistment by those producers who do so. Generally, the destination region (and seasonality) for movements are unpredictable and very dependent on the particular local seasonal conditions and the availability of agistment.

9. Interstate movements

Cattle movements into Western Australia, Queensland and Tasmania and the Northern Territory are subject to regulatory requirements for animal health and records are maintained. The WA and Tasmanian animal health authorities undertake physical inspections and have provided data on significant cattle movements.

Tasmania

Tasmania (Beef Region 11) is a significant supplier of replacement cattle to the mainland and domestic exports to the mainland are recorded. These are summarised in Table 23.

Table 23. Seasonal distribution of exports of live cattle from Tasmania (Beef Region 11) to the mainland, March 2003 to February 2005 (source: Tasmanian Freight Equalisation Scheme).

	Summer	Autumn	Winter	Spring	Annual
2005	12,767	-	-	-	
2004	17,826	28,629	20,278	11,320	
2003	-	21,937	9,886	11,326	
Average	15,297	25,283	15,082	11,323	66,985

Fewer cattle move to Tasmania from the mainland in a normal year. Table 24 differentiates slaughter and non-slaughter cattle for the years ending June 2002 to 2004. Seasonal data were not available.

Table 24. Numbers of live cattle imported to Tasmania (Beef Region 11) from the mainland for the years ending June 2002 to 2004 (source: Tasmanian Freight Equalisation Scheme).

Year ending June	Slaughter cattle	Other cattle	Total
2004	2,442	2,288	4,730
2003	13,176	36,626	49,802
2002	1,036	2,098	3,134

These data do not differentiate between beef and dairy cattle and it is likely that a significant number of the cattle imported, other than for slaughter, were dairy cattle. The

substantial increase in imports of store cattle in 2003 was the result of Tasmania experiencing a good season while the mainland was drought affected. In the same year, the main export abattoir in Tasmania was owned by a company which had another works on the mainland and, for a number of reasons, the company imported a large number of cattle into Tasmania to slaughter at its plant there. The Tasmanian abattoir was subsequently sold and the new owners have not continued to import as many animals for slaughter. For these reasons, average numbers have not been included in the table.

Western Australia

Western Australia restricts and reports imports of animals from the eastern states for pest and disease control. There are only two routes for the legal entry of livestock by road into WA, in the south and north. In the three financial years ending June 2002 to 2004, the numbers of beef cattle imported to WA by road on the Eyre Highway and inspected at Kalgoorlie were 3,844, 1,733 and 852, averaging 2,143 head. Most of these cattle would have been restocked or slaughtered in south-west WA (ie Beef Region 12).

More detailed data were available for the introductions to northern WA and inspected at (Table 25). A significant number of cattle are recorded as having been imported to WA that originate from properties that straddle the WA-NT border.

Table 25. Numbers and origins of beef cattle imported into northern WA, 2002-2004 (Source: WADA)

	Breeding and Store Cattle				Cattle directly to live export
	QLD	NT	NT-WA border props	Sub-Total	
2004	1,026	7,000	1,076	9,102	19,459
2003	2,149	12,084	2,364	16,597	15,699
2002	4,935	15,775	6,841	27,551	15,926
Ave	2,703	11,620	3,427	17,750	17,028

No restocker cattle originated from other states.

Northern Territory

The Department of Primary Industries in the Northern Territory (NT) maintains an electronic database of waybills for introductions from and exports to other jurisdictions in Australia. These movements are categorised by the reason for movement (eg slaughter, live export) and by the NT region of destination or origin (Tables 26 to 29). The four regions correspond approximately to the four Beef Regions represented in the NT as follows:

1. Darwin
2. Katherine
3. Alice Springs
4. Tennant Creek

Table 26. Numbers of cattle exported from regions in the Northern Territory to other states for the purposes of live export and for slaughter, 2002-2004.

Purpose	Year	Darwin	Katherine	Tennant Creek	Alice Springs	Total
Live Export	2004	1,233	30,522	0	1,249	33,004
	2003	1,017	14,734	0	785	16,536
	2002	2	8,166	0	865	9,033
Slaughter	2004	585	2,811	14,095	26,291	43,782
	2003	0	1,928	31,461	33,574	66,963
	2002	107	6,766	17,999	9,769	34,641

The states to which cattle moved for slaughter and live export were mainly WA and Queensland but this varied between years. Slaughter cattle from Alice Springs also moved to South Australia and other southern states.

Table 27. Numbers of cattle imported to regions in the Northern Territory from other states for the purpose of live export, 2002-2004.

Purpose	Year	Darwin	Katherine	Tennant Creek	Alice Springs	Total
Live Export	2004	722	291	0	0	1,013
	2003	13,136	1,475	801	0	15,412
	2002	39,674	961	1,093	0	41,728

All cattle passing through NT for live export during these years originated in Queensland.

The NT is a significant nett exporter of store cattle (Table 28 and 29). As these cattle remain on destination properties for an indefinite period, they are potentially more important from the perspective of disease management.

Table 28. Numbers of store cattle exported from regions in the Northern Territory to other States, 2002-2004.

2004	QLD	NSW	VIC	TAS	SA	WA	Total
Darwin	14,136	0	0	0	0	59	14,195
Katherine	26,982	0	0	0	0	10,883	37,865
Tennant Creek	127,664	591	331	0	1,866	413	130,865
Alice Springs	23,553	11,493	4,671	0	40,404	192	80,313
	192,335	12,084	5,002	0	42,270	11,547	263,238

2003

Darwin	0	0	0	0	0	0	0
Katherine	9,901	0	0	0	0	14,970	24,871
Tennant Creek	134,709	1,403	792	0	655	270	137,829
Alice Springs	11,296	20,014	8,179	0	48,086	1,008	88,583
	155,906	21,417	8,971	0	48,741	16,248	251,283

2002

Darwin	168	0	0	0	0	2,124	2,292
Katherine	3,254	0	0	0	0	10,184	13,438
Tennant Creek	32,988	0	0	0	1,179	4,639	38,806
Alice Springs	5,078	121	294	0	20,257	444	26,194
	41,488	121	294	0	21,436	17,391	80,730

Table 29. Numbers of store cattle imported to regions in the Northern Territory from other states, 2002-2004.

2004	QLD	NSW	VIC	TAS	SA	WA	Total
Darwin	848	0	34	0	0	0	882
Katherine	2,212	0	0	0	0	5,689	7,901
Tennant Creek	13,922	0	0	0	38	0	13,960
Alice Springs	576	0	5	0	0	180	761
	17,558	0	39	0	38	5,869	23,504

2003

Darwin	1,903	0	0	0	0	669	2,572
Katherine	9,583	0	0	0	0	168	9,751
Tennant Creek	10,113	0	0	0	0	0	10,113
Alice Springs	3	3	0	0	0	0	6
	21,602	3	0	0	0	837	22,442

2002

Darwin	1,247	0	0	3	0	0	1,250
Katherine	2,797	0	0	0	0	0	2,797
Tennant Creek	35,568	0	0	6	0	0	35,574
Alice Springs	230	10	0	0	0	0	240
	39,842	10	0	9	0	0	39,861

10. Factors influencing demographics and movements at the national level

Trends and drivers at the regional levels have been described in Table 6. In summary, these regional reports identified that live export, integration of large pastoral company operations and lot-feeding in particular had been major drivers in changing the Production Sectors in some regions and the ways cattle moved. The demise of pasture based finishing over much of southern Australia has been exacerbated by prolonged drought so that specialist pasture finishers are now rare and breeders are increasingly turning off cattle to feedlots. Land values have also forced many beef operations out of some southern areas in favour of cropping, horticulture and dairying.

At the national level, interpretive summaries of the state of the Australian beef industry and its prospects are regularly published by ABARE and MLA and recent publications relevant to this project are listed in the references.

The following description of the beef industry, published by ABARE and MLA in Australian Beef Industry Updates 04.1 and 04.2 (ABARE June and November 2004), summarises the factors affecting the national beef industry and puts the data presented in this report into context. A comprehensive MLA report on seasonality in the beef industry was also published in 2005 (MLA 2005) and Beef Industry Update 04.3 also describes national trends in production, turn-off and selling methods in more detail (ABARE December 2004).

Beef industry farms

Beef cattle production is the most common enterprise on Australian farms and involves a wide range of farm sizes and types of production system. Properties engaged mainly in running beef cattle are termed 'specialist beef properties'. An estimated 18 000 properties are engaged mainly in running beef cattle and a further 22 000 properties run more than 50 beef cattle but are engaged mainly in enterprises other than beef cattle. These properties are termed 'nonspecialist beef properties'.

Specialist beef properties carry over 60 per cent of Australia's beef cattle, with larger specialist beef cattle properties (mostly located in northern Australia) carrying the majority of the herd. Small specialist beef properties (those with fewer than 300 beef cattle) carry only 9 per cent of the herd, but contributed around 15 per cent of the total gross value of beef cattle sales in 2001-02. This contribution largely reflects the location of small beef industry properties in the high rainfall areas of southern Australia, where turnoff rates are higher and the value of animals turned off is high compared with that in the pastoral regions and northern Australia.

Trends in beef cattle numbers in recent years have differed between northern and southern Australia. Increases in the national herd to 2002 were driven mainly by an increase in the northern herd, with cattle numbers in southern Australia decreasing between 1997 and 2002. Development of the live cattle export industry in northern Australia has led to a reduction in steer and bullock production, an increase in the production of younger cattle and a higher rate of turnoff. The northern live cattle industry — covering the Northern Territory, north west Queensland, and the Kimberley and Pilbara regions of Western Australia — supplies 75–80 per cent of the live cattle trade.

Drought resulted in a significant cut to the size of the Australian cattle herd and reduced farm incomes in 2002-03. As recovery from drought proceeded in 2003-04, beef producers' efforts to rebuild herds limited their beef production and farm incomes. From mid-2002 drought significantly affected pasture and water availability for the majority of Australian beef farms, leading to an increase in beef cattle turnoff and a reduction in herd productivity. Compounding the reduction in feed available, crop production in 2002-03 was one of the worst on record and drought was accompanied by critically low availability of irrigation water in a number of key storages after years of below average rainfall and high irrigation use. As a result, production of irrigated pasture and fodder, traditionally a source of supplementary feed for drought affected areas, was substantially reduced. With a large increase in demand for fodder and feed grain across drought affected areas, fodder and feed grain prices rose sharply in the second half of 2002 and remained high until the last quarter of 2003. Livestock producers had to source a significant portion of their cattle feed requirements from well outside their region, further adding to feed costs.

Beef cattle numbers

In the lead up to the drought, high saleyard prices for cattle, fueled by strong global demand and a favorable Australian exchange rate, resulted in herd building activity. By the end of June 2002, cattle numbers reached 27.9 million, the highest since 1978.

Nationally, beef cattle numbers are estimated to have fallen by 5 per cent in 2002-03 as producers increased turnoff in response to poor pasture and water availability and high feed grain prices. Reflecting this, total beef cattle slaughter increased by 7 per cent in 2002-03. However, meat production increased by just 2 per cent as average slaughter weights fell as cattle condition deteriorated during the drought and the proportion of cows and heifers slaughtered increased.

The number of cattle in feedlots fell during 2002-03 in response to reduced availability of stock and tighter margins caused by the sharp increase in feed grain prices and lower demand from the Japanese market that was still recovering from the discovery of bovine spongiform encephalopathy (BSE or 'mad cow' disease) in 2001. However, the number of beef cattle in feedlots destined for the domestic market increased to just over 50 per cent. Increasing domestic demand for grain finished cattle, particularly from supermarkets, presented the lot feeding sector with an opportunity to achieve reasonable returns from finishing large numbers of cattle on grain when pasture was rapidly disappearing.

Live cattle exports increased by 21 per cent during 2002-03 to a record 968 000 cattle, reflecting strong import demand from Indonesia and lower beef cattle prices.

Improved conditions in many parts of Australia in 2003-04 enabled some herd rebuilding to occur. However, rebuilding efforts are likely to be hindered by below average calving rates caused by the poor condition of many producers' breeding cows. Given that the period between joining a cow and the resultant heifer calf producing offspring takes around three years, it is likely to take three or four years before the cattle herd can recover to pre-drought levels. The rate at which numbers recover will also be influenced by such factors as producer expectations about future returns from beef and returns from competing farm enterprises.

In addition, some areas in both northern and southern Australia experienced a late start to the 2003-04 season, resulting in only a small improvement in pasture growth and a delay in herd rebuilding. In 2003-04, beef cattle numbers are expected to decrease by around 0.6 per cent. As a result of herd rebuilding efforts, beef cattle slaughtering is forecast to fall by around 6 per cent to 8.7 million cattle. However, a recovery in the average slaughter weight is expected to have partially offset the impact of reduced turnoff and production is expected to have fallen by around 4 per cent in 2003-04.

The reduction in beef cattle numbers since 2000 has been largest in northern Australia, but during 2002-03 the largest percentage reduction in herd size actually occurred on properties carrying less than 300 beef cattle in southern Australia. Many very small beef properties reduced their herds by over 20 per cent. However, because small herds in aggregate account for only a small proportion of the national herd, the impact of the reduction in beef cattle numbers on the national herd is small.

Source: Australian Beef Industry Updates 04.1 and 04.2, 2004

Acknowledgements

The success of this study has depended on the assistance, expert opinion and advice of a large number of people and organisations whose contribution is sincerely appreciated.

ABARE	Peter Martin
AUS-MEAT	Robert Taylor
Australian Agricultural Company	Geoff Wagstaff Rob Backus
Australian Bureau of Statistics	Greg Miller
Dibbs Livestock Services	Michael Dibbs
Elders	Luke Hutchinson
Landmark	Mark Barton
LiveCorp	Rosanne Ransley
National Livestock Reporting Service (MLA)	Aaron Iori
NSW Department of Primary Industries	Greg Meaker Brian Cumming Peter Worsley
NT Department of Business, Industry & Resource Development	Neil McDonald Kel Small Adele Kluth
Qld Department Primary Industries and Fisheries	Mick Sullivan Alan Laing John Bertram
Royal Agricultural Society of the Northern Territory	Chris Irvine
Royal Agricultural Society WA	
Saleyards Operators Association of NSW	Ron Penny
Tasmanian Department of Primary Industries, Water & Environment	Peter Ball Bruce Jackson
Teale Livestock	Greg Teale
University of New England	Wayne Upton
Victorian Department of Primary Industries	Tim Hollier Emma Weatherly
WA Department of Agriculture	Greg Sawyer Geoff Tudor Peter Smith Garry Hodgen Dave Muirson Melissa Molloy Bob Vassallo
John Bowler	

References

- ABARE. Productivity and financial performance. *Australian Beef Industry Update 04.1* June 2004. Meat & Livestock Australia. 8pp.
- ABARE. Productivity. *Australian Beef Industry Update 04.2*. November 2004. Meat & Livestock Australia. 8pp.
- ABARE. Production and sale of beef cattle. *Australian Beef Industry Update 04.3*. December 2004. Meat & Livestock Australia. 8pp.
- Bindon BM and Jones NM. 2001 Cattle Supply, production systems and markets for Australian beef. *Aus J Exp Agric* 41:861-877.
- Cunningham DC, Fabiansson SU, Sykes W & Munro RK. 2002. Tracking and mapping livestock movements in Australia. Bureau of Rural Sciences, Canberra.
- Meat & Livestock Australia. *Fastfacts – Australia’s Beef Industry*. 2004. 2pp.
- Meat & Livestock Australia. Australia’s top red meat processors. *Feedback - Meat & Livestock Industry Journal*. August 2004. i-xii.
- Meat & Livestock Australia. Seasonality in the Australian beef industry. *Market briefs - Meat and livestock market information*. April 2005. 12pp.
- Meat & Livestock Australia. State of pay for NLIS. *Feedback - Meat & Livestock Industry Journal*. May 2005. 10.
- Parry SD and Parry KA. 2005. In *Proc. Australian Cattle Veterinarians 2005*. May 2005. 182-186.
- Sere C & Steinfeld H. 1995. World Livestock Production Systems: Current status, issues and trends. *FAO Animal Production And Health Paper 127*. Food and Agriculture Organisation of the United Nations, Rome. pp 92.
- Whan I and Backus R. 2005. Impact of innovation on beef production in northern Australia. *Australian Journal of Experimental Agriculture*. In press.

Appendix 1.

Saleyard throughput of cattle in mainland Australia

(Source: Various industry and government organisations).

Beef Region	State	Location	2004	2003	2002	Mean
2	QLD	Charters Towers	57,891	40,855	49,333	49,360
2	QLD	Mareeba	46,379	33,843	550	26,924
2	QLD	Richmond	21,562	19,141	25,675	22,126
3	QLD	Winton	42,896	14,981		28,939
5	NSW	Bonalbo	110			110
5	NSW	Casino	121,264	124,456	120,239	121,986
5	NSW	Grafton	65,456	51,706	52,878	56,680
5	NSW	Lismore	47,641	45,168	44,698	45,836
5	QLD	Beaudesert	1,797	5,633	1,802	3,077
5	QLD	Biggenden	19,000	18,500	19,500	19,000
5	QLD	Biloela	15,939	11,705	15,056	14,233
5	QLD	Boonah	7,182	7,396	6,288	6,955
5	QLD	Bowen		330		330
5	QLD	Braeside/Nebo	15,161			15,161
5	QLD	Eidsvold	4,948	2,201	985	2,711
5	QLD	Esk			614	614
5	QLD	Eumundi	13,850	3,710		8,780
5	QLD	Gatton	5,459	4,999		5,229
5	QLD	Gin Gin	5,439	5,494	6,118	5,684
5	QLD	Gracemere	163,289	131,425	144,372	146,362
5	QLD	Gympie	48,999	94,823	54,274	66,032
5	QLD	Kingaroy			10,550	10,550
5	QLD	Laidley			3,702	3,702
5	QLD	Maleny		10,592	44,719	27,656
5	QLD	Maryborough	2,900	2,000		2,450
5	QLD	Miriam Vale			6,218	6,218
5	QLD	Moreton	49,139	49,651	36,935	45,242
5	QLD	Moura	17,149	19,279	18,685	18,371
5	QLD	Murgon	43,596	24,491	34,681	34,256
5	QLD	Nebo		11,142	10,378	10,760
5	QLD	Sarina	8,799	7,814	8,502	8,372
5	QLD	Silverdale (Churchill)	54,091	33,341	26,459	37,964
5	QLD	St Lawrence	829	838	1,175	947
5	QLD	Toogoolawah	43,661	36,771	32,352	37,595
5	QLD	Woolooga		4,676	13,633	9,155

Structure and Dynamics of the Australian Beef Cattle Industry

Beef Region	State	Location	2004	2003	2002	Mean
6	NSW	Barraba	6,170		5,000	5,585
6	NSW	Binnaway		9,211		9,211
6	NSW	Coonmable	33,650	22,062	65,254	40,322
6	NSW	Goondiwindi		47,055	31,848	39,452
6	NSW	Gunnedah	124,037	129,650	139,769	131,152
6	NSW	Macintyre	27,694			27,694
6	NSW	Moree	36,937	43,812	61,445	47,398
6	NSW	Narrabri	54,045	50,160	57,692	53,966
6	NSW	Nyngan			1,926	1,926
6	NSW	Quirindi	5,098	9,587	16,939	10,541
6	NSW	Tamworth	115,824	118,638	99,662	111,375
6	NSW	Walgett	4,120		7,656	5,888
6	QLD	Barcaldine	7,052	7,951	17,254	10,752
6	QLD	Blackall	15,521	21,273		18,397
6	QLD	Chinchilla	2,809	2,732	1,631	2,391
6	QLD	Clermont		1,734	8,343	5,039
6	QLD	Coolabunia/Kingaroy	9,515	9,866		9,691
6	QLD	Dalby	223,913	234,763	192,516	217,064
6	QLD	Emerald/Peak Downs	85,331	91,857	160,000	112,396
6	QLD	Inglewood	1,506	1,095	594	1,065
6	QLD	Longreach	85,578	44,780	99,193	76,517
6	QLD	Monto	8,540	6,051	10,638	8,410
6	QLD	Oakey	43,711	49,361	52,769	48,614
6	QLD	Rollestone		1,287		1,287
6	QLD	Roma	358,549	362,057	269,695	330,100
6	QLD	Springsure	2,988	2,182	4,017	3,062
6	QLD	Stanthorpe	8,882			8,882
6	QLD	Taroom	1,402		2,575	1,989
6	QLD	Texas		1,282		1,282
6	QLD	Toowoomba Landmark	24,865	24,288	17,415	22,189
6	QLD	Toowoomba Primac	93,533	111,055	85,401	96,663
6	QLD	Wandoan	8,002	5,708	6,208	6,639
6	QLD	Warwick	53,863	56,321	51,776	53,987
7	NSW	Armidale	56,456	79,505	75,076	70,346
7	NSW	Glen Innes	31,355	35,170	34,089	33,538
7	NSW	Guyra	821	1,495		1,158
7	NSW	Inverell	113,940	103,268	106,609	107,939
7	NSW	Nowendoc	600			600
7	NSW	Tenterfield	20,353	21,376	22,834	21,521
7	NSW	Walcha	19,822	24,765		22,294

Structure and Dynamics of the Australian Beef Cattle Industry

Beef Region	State	Location	2004	2003	2002	Mean
8	NSW	Bathurst	93,196	101,828	83,340	92,788
8	NSW	Bega	44,464	40,449	31,345	38,753
8	NSW	Blayney		421		421
8	NSW	Bombala	2,800		3,535	3,168
8	NSW	Boorowa	635			635
8	NSW	Braidwood	16,368	17,344	21,089	18,267
8	NSW	Camden	41,240	45,503	33,402	40,048
8	NSW	Cooma	21,333	27,108	16,515	21,652
8	NSW	Crookwell	531		1,900	1,216
8	NSW	Denman	1,382			1,382
8	NSW	Dorrigo	11,221	10,905	11,843	11,323
8	NSW	Dungog		900	546	723
8	NSW	Gloucester	27,965	33,445	26,358	29,256
8	NSW	Goulburn	47,643	56,527	42,048	48,739
8	NSW	Kempsey	33,261	30,117	31,783	31,720
8	NSW	Macksville	21,046	10,614	3,549	11,736
8	NSW	Maitland	69,504	82,428	73,563	75,165
8	NSW	Meadow Flat			790	790
8	NSW	Moss Vale	66,798	69,264	50,030	62,031
8	NSW	Nabiac	1,819		2,386	2,103
8	NSW	Nowra	27,668	28,159	25,124	26,984
8	NSW	Orange	57,489	68,982	55,904	60,792
8	NSW	Scone	68,169	76,165	92,124	78,819
8	NSW	Singleton	62,162	73,706	66,631	67,500
8	NSW	Taree	50,261	51,046	47,779	49,695
8	NSW	Tumbarumba	1,400			1,400
8	NSW	Tumut	12,741	15,007	12,939	13,562
8	NSW	Wauchope	16,818	15,068	16,479	16,122
8	NSW	Windsor	12,754	12,682	14,735	13,390
8	NSW	Wollombi	1,299		1,572	1,436
8	NSW	Yass	10,319	11,967	11,630	11,305
8	VIC	Alexandria	4,115	4,764	4,376	4,418
8	VIC	Bairnsdale	77,770	85,425	40,274	67,823
8	VIC	Corryong	7,345	11,646	7,779	8,923
8	VIC	Sale	63,559	58,692		61,126
8	VIC	VLE Pakenham		172,897	130,500	151,699
8	VIC	Wodonga	185,846	259,220	196,932	213,999
8	VIC	Mansfield	5,208	4,490		4,849

Structure and Dynamics of the Australian Beef Cattle Industry

Beef Region	State	Location	2004	2003	2002	Mean
9	NSW	Adelong	9,247			9,247
9	NSW	Condobolin	451	1,265	8,398	3,371
9	NSW	Coolah	6,378	7,585	10,864	8,276
9	NSW	Coonabarabran			3,331	3,331
9	NSW	Cootamundra	5,712	9,392	10,198	8,434
9	NSW	Cowra	18,113	28,699	20,348	22,387
9	NSW	Deniliquin	17,243	15,216	14,968	15,809
9	NSW	Dubbo	231,654	230,981	263,980	242,205
9	NSW	Dunedoo	20,594	18,634	14,680	17,969
9	NSW	Finley	21,741	34,145	40,207	32,031
9	NSW	Forbes	65,119	89,239	64,199	72,852
9	NSW	Griffith	11,349	8,767	13,253	11,123
9	NSW	Gundagai	9,185	15,993	12,575	12,584
9	NSW	Harden	6,797			6,797
9	NSW	Leeton			3,321	3,321
9	NSW	Mudgee	46,473	48,574	47,798	47,615
9	NSW	Narranderra	2,200			2,200
9	NSW	Tullibigeal			238	238
9	NSW	Wagga	126,238	179,622	125,623	143,828
9	NSW	West Wyalong			358	358
9	NSW	Young	9,600	12,387	11,602	11,196
9	VIC	Yea	14,622	11,272	9,697	11,864
9	VIC	Bendigo	26,735	35,053	40,974	34,254
9	VIC	Cobram	15,908	14,591	15,390	15,296
9	VIC	Echuca	32,069	27,755	30,226	30,017
9	VIC	Euroa	24,936	25,372	20,276	23,528
9	VIC	Shepparton	98,605	96,869		97,737
9	VIC	Wangaratta	47,957	50,837	43,223	47,339
10	SA	Adelaide Plains	75,315	77,612	70,459	74,462
10	SA	Millicent	29,748	22,495	20,582	24,275
10	SA	Mt Gambier	132,218	113,953	95,605	113,925
10	SA	Naracoorte	103,996	74,830	67,340	82,055
10	VIC	Ballarat	61,880	62,416	41,659	55,318
10	VIC	Camperdown	67,237	63,703	49,606	60,182
10	VIC	Casterton	11,789	13,825	11,482	12,365
10	VIC	Colac	55,114	48,675	37,553	47,114
10	VIC	Geelong	20,936	27,089	21,911	23,312
10	VIC	Hamilton	62,742	49,520	39,668	50,643
10	VIC	Horsham	3,549	3,802	3,420	3,590
10	VIC	Kerang	16,844	27,879	22,584	22,436
10	VIC	Kyneton	17,721	24,805	21,790	21,439
10	VIC	Mildura	727	1,041	1,462	1,077
10	VIC	Swan Hill	19,164	29,414	38,273	28,950
10	VIC	Warrnambool	113,864	104,741	79,511	99,372

Structure and Dynamics of the Australian Beef Cattle Industry

Beef Region	State	Location	2004	2003	2002	Mean
12	WA	Waroona	6,391			6,391
12	WA	Boyanup	44,411			44,411
12	WA	Bridgetown	8,158			8,158
12	WA	Brunswick	19,723			19,723
12	WA	Esperance	2,659			2,659
12	WA	Manjimup	6,235			6,235
12	WA	Midland	125,838	136,003	147,893	136,578
12	WA	Namgulu	7,499			7,499
12	WA	Plantagenet	70,246	58,500		64,373

Appendix 2.

Expert opinion on the “Typical Beef Herd”

A. Demographics

Genetic types of cattle

Table A2.1: Breed type and composition of Australian beef cattle by region and sector

Region	Sector	% Pure bred	% Cross bred	% Composite	% <i>Bos taurus</i>	% <i>Bos indicus</i>	% Mixed
1	B	50	46	4		80	20
1	D	50	46	4		80	20
2	A	85	15			85	15
2	B	85	15			85	15
2	C	85	15			85	15
3	B	70	30		20	80	
4	A	75	5	20		75	25
5	B	60	30	10	2	70	28
5	C	60	30	10	2	70	28
6	B	60	35	5	55	45	
6	C	60	35	5	55	45	
6	E	60	35	5	55	45	
6	F		100		80	20	
7	A	65	35		80	15	5
7	B	65	35		80	15	5
7	C	65	35		80	5	15
7	F	80	20		90		10
8	A	50	45	5	100		
8	B	55	45		100		
9	A	80	20		100		
9	B	80	20		100		
9	C	40	60		100		
9	D	70	30		100		
9	E	70	30		100		
9	F	40	60		100		
10	A	85	15		100		
10	B	85	15		100		
10	C	85	15		100		
10	E	80	20		100		
11	A	80	20		100		
11	B	80	20		99	1	
11	E	80	20		100		
11	F	100			100		
12	A	30	70		90	10	
12	C	20	60	20	70	10	20
12	E	70	30		90	10	
12	F	70	30		90		10

Structure and Dynamics of the Australian Beef Cattle Industry

Cows

Table A2.2: Summary of cow-numbers and age structure for typical herds in each beef region and sector

Region	Sector	No. Breeding cows	No. Breeding heifers	< 3 yrs	3 – 6 yrs	> 6 yrs	Maximum age	No. Cows joined on largest 5% of holdings	% of holdings with < 20 head
1	B	3000	1500	35	35	30	16	25000	30
2	A	2873	1465	34	39	27	12	18000	0
2	B	2542	1295	34	39	27	12	18000	0
2	C	1899	933	34	39	27	12	18000	0
3	B	3000	1000	30	50	20	12	10000	0
4	A	12000	2000	10	45	45	10	25000	0
5	B	700	780	20	50	30	12	3000	30
5	C	580	552	20	50	30	12	3000	30
6	B	400	80	25	35	40	12	1500	1
6	C	300	100	25	35	40	12	1500	1
7	A	400	60	10	80	10	8	3200	10
7	B	400	100	10	80	10	8	3000	10
7	C	350	75	10	80	10	10	2000	10
8	A	350	70	30	45	25	8	1200	5
8	B	300	60	30	45	25	8	600	0
9	A	150	20	40	40	20	12	500	15
9	B	250	40	30	50	20	10	500	15
9	C	150	20	20	40	40	10	400	20
9	D	300	60	20	50	30	10	1000	20
10	A	250	75	28	60	12	12	400	15
10	B	250	110	30	50	20	12	400	15
10	C	250	100	30	60	10	12	400	15
11	A	200	40	20	50	30	14	500	20
11	B	200	40	20	50	30	14	500	15
12	A	250	60	20	60	20	10	2000	25
12	C	200	60	20	60	20	10	2000	12

Structure and Dynamics of the Australian Beef Cattle Industry

Bulls and steers

Table A2.3: Summary of bull and steer numbers and age structure for typical herds in each beef region and sector.

Region	Sector	No. Bulls	< 3 yrs	3 – 6 yrs	> 6 yrs	Maximum age	No. Steers	< 2 yrs	2 – 3 yrs	> 3 yrs	Maximum age
1	B	120	25	60	15	10	800	80	19	1	4
1	D						2000	90	10		4
2	A	155	19	51	30	10	1150	100			4
2	B	137	19	51	30	10	2000	50	50	0	4
2	C	101	19	51	30	10	1900	42	42	16	4
3	B	120	40	50	10	10	1200	90	10	0	4
4	A	800	10	45	45	10	1000	100	0	0	1
5	B	31	25	60	15	10	700	50	50		4
5	C	25	25	60	15	10	1016	55	25	20	4
6	B	20	30	60	10	8	380	60	30	10	4
6	C	5	30	60	10	8	380	45	40	15	4
6	E						2000	45	40	15	4
6	F						10000	50	50		3
7	A	12	50	45	5	5	180	100			3
7	B	12	50	45	5	6	180	100			2
7	C	10	50	45	5	8	225	60	40		3
7	F						2000	80	20		3
8	A	10	70	30		6	170	100			1
8	B	6	70	30		6	135	100			2
9	A	4	50	40	10	10	70	100			1
9	B	8	50	40	10	10	110	100			2
9	C	4	20	50	30	8	70	100			2
9	D	10	30	40	30	8	200	100			2
9	E						200	100			2
9	F						1000	100			2
10	A	6	30	70		6	110	100			1
10	B	6	23	70	7	6	110	100			2
10	C	6	35	60	5	6	150	100			2
10	E						250	50	50		3
11	A	8	30	60	10	8	80	100			2
11	B	8	30	60	10	8	100	70	30		3
11	E						350	85	15		3
11	F						1000	80	20		3
12	A	8	50	50	0	6	110	100			2
12	C	6	50	50	0	6	170	100			2
12	E						300	80	20		3
12	F						2000	80	20		3

B. Feeding practices

Table A2.4: Estimated percentages of producers in each sector and region adopting various feeding practices

Region	Sector	Pasture only	Pasture + conserved fodder	Pasture + mineral/urea	Pasture + protein supp	Processed feed	% Other	Other desc.
1	B	25	5	70				
1	D	25	5	70				
2	A	20		80				
2	B	20		80				
2	C	20		80				
3	B	80		20				
4	A			100				
5	B	5	2	50	5	5	33	molasses/urea/protein
5	C	5	2	50	5	5	33	molasses/urea/protein
6	B	5	10	35	35	15		
6	C	5	10	25	40	20		
6	E		10	25	40	20	5	water medication
6	F					100		
7	A	10	10	40	40			
7	B	10	10	40	40			
7	C	10	10	40	20	20		
7	F					100		
8	A	40	20	20	20			
8	B	40	20	20	20			
9	A	15	80			5		
9	B	20	80					
9	C	70	20			10		
9	D	50	50					
9	E		80			20		
9	F					100		
10	A		90	10				
10	B		90	10				
10	C		100					
10	E		100					
11	A	10	80	10				
11	B	10	85	5				
11	E	80	20					
11	F					100		
12	A	20	80					
12	C	10	90					
12	E		100					
12	F					100		

Structure and Dynamics of the Australian Beef Cattle Industry

Table A2.5: Percentages of producers who feed processed feed at specified frequencies and the ages of cattle fed

Region	Sector	Feeding processed feed (%)			Ages fed				Finishers only
		Never	Drought only	Every/ most years	< 6 mths	6-12 mths	1-2 yrs	>2 yrs	
1	B	40	40	20		Yes			No
1	D	70	10	20					
2	A	95	5		Yes				No
2	B	95	5		Yes				No
2	C	95	5		Yes				No
3	B	90	10		Yes				No
4	A	100							
5	B	50	40	10	Yes	Yes	Yes	Yes	No
5	C	50	40	10	Yes	Yes	Yes	Yes	No
6	B	35	50	15	Yes	Yes	Yes	Yes	No
6	C	35	50	15	Yes	Yes	Yes	Yes	No
6	E		50	50		Yes	Yes	Yes	No
6	F			100	Yes	Yes	Yes	Yes	Yes
7	A	100							
7	B	80	20			Yes			No
7	C	80	20				Yes	Yes	Yes
7	F			100			Yes	Yes	Yes
8	A	20	80					Yes	No
8	B	20	80				Yes	Yes	No
9	A	95		5		Yes			No
9	B	100							
9	C			10			Yes		Yes
9	D	100							
9	E	80		20			Yes		Yes
9	F			100		Yes			Yes
10	A	100							
10	B	100							
10	C	100							
10	E	100							
11	A	90	10		Yes				No
11	B	90	10			Yes		Yes	No
11	E	100							
11	F			100			Yes	Yes	Yes
12	A	100							
12	C	100							
12	E	100							
12	F			100			Yes	Yes	Yes

C. Mustering practices

Table A2.6: Annual frequency of mustering cows, heifers and steers for each region and sector

Region	Sector	Cows	Heifers	Steers
1	B	2	2	2
1	D			4
2	A	2	3	2
2	B	2	3	2
2	C	2	3	2
3	B	1	1	1
4	A	2	2	2
5	B	3	3	2
5	C	3	3	2
6	B	2	3	3
6	C	2	3	3
6	E			15
6	F			52
7	A	4	5	
7	B	4	5	5
7	C	4	5	6
7	F			52
8	A	4	3	
8	B	4	3	4
9	A	4	4	4
9	B	4	4	4
9	C	4	4	6
9	D	4	4	4
9	E			3
9	F			52
10	A	5	3	
10	B	5	3	4
10	C	5	4	4
10	E			6
11	A	6	6	3
11	B	6	6	3
11	E			6
11	F			52
12	A	4	3	
12	C	4	3	3
12	E			6
12	F			12

Table A2.7: Frequency of musters for management activities by season for herds in each region and sector

Region	Sector	Summer	Autumn	Winter	Spring	Total
1	B	2		4	3	9
1	D			1	1	2
2	A	2	2	4	5	13
2	B	2	2	4	5	13
2	C	2	2	4	5	13
3	B	1	1	4	2	8
4	A	1	4		2	7
5	B	3	6	3	1	13
5	C	3	6	3	1	13
6	B	2	3	3	1	9
6	C	2	3	3	1	9
6	E	1	1	1	1	4
6	F	1	1	1	1	4
7	A	3	2	1	1	7
7	B	4	1	1	1	7
7	C	4	1	1	1	7
7	F	2	2	2	2	8
8	A		4	1	2	7
8	B		4	1	2	7
9	A	4	3	3	3	13
9	B	4	3	3	3	13
9	C	4	3	3	2	12
9	D	3	2	1	3	9
9	E		1	1	2	4
9	F	2	2	2	2	8
10	A	3	2	3		8
10	B	2	2	2	4	10
10	C	3	2	3	1	9
10	E	1	1	2	2	6
11	A	3	2		2	7
11	B	2	4	1	3	10
11	E	2	1	1	2	6
11	F	2	2	2	2	8
12	A	3	1	2	2	8
12	C	3	1	2	4	10
12	E	1	2	1	2	6
12	F	2	2	2	2	8

D. Movements On

Table A2.8: Percentage of animals introduced (as a percentage of the numbers of animals of that type recorded in Tables A2.2 and A2.3) and numbers and seasonality of consignments for introductions to typical enterprises for each beef region and production sector.

Region	Sector	Cattle type	% relevant population introduced	Number of consignments				
				Total	Summer	Autumn	Winter	Spring
1	B	Bulls	20	2			1	1
1	D	Steers	100	4	2	2		
2	A	Bulls	20	3		1	1	1
2	B	Bulls	20	3		1	1	1
2	C	Bulls	20	3		1	1	1
3	B	Bulls	30	1		1		
4	A	Bulls	19	1				1
5	B	Bulls	20	3	1			2
5	C	Bulls	20	3	1			2
6	B	Cows	5	1			1	
6	B	Heifers	5	1			1	
6	B	Bulls	25	1				1
6	B	Steers	20	3	1	1	1	
6	C	Cows	5	1			1	
6	C	Heifers	5	1			1	
6	C	Bulls	25	1				1
6	C	Steers	20	3	1	1	1	
6	E	Steers	100	15	4	4	4	3
6	F	Steers	100	200	50	50	50	50
7	B	Steers	100	2		2		
7	B	Bulls	100	2			2	
7	C	Bulls	100	2			2	
7	C	Steers	40	2		2		
7	F	Steers	100	10	2	4	4	4
8	A	Bulls	25	2		1		1
8	B	Bulls	25	2		1		1

Structure and Dynamics of the Australian Beef Cattle Industry

Table A2.8 (con)

Region	Sector	Cattle type	% relevant population introduced	Number of consignments				
				Total	Summer	Autumn	Winter	Spring
9	A	Heifers	20	1	1			
9	A	Bulls	100	1			1	
9	B	Heifers	20	1	1			
9	B	Bulls	100		1			
9	C	Heifers	20	1		1		
9	C	Bulls	100	1		1		
9	C	Steers	20	1		1		
9	D	Steers	30	2		2		
9	D	Bulls	25	2				
9	E	Steers	100	4		3		1
9	F	Steers	100	6	1	3	1	1
10	A	Bulls	33	1		1		
10	B	Bulls	33	1		1		
10	C	Bulls	33	1		1		
10	E	Steers	100	4	2			2
11	A	Bulls	25	1		1		
11	B	Bulls	25	1		1		
11	B	Steers	20	1		1		
11	E	Steers	100	3	1	2		
11	F	Steers	100	2	1			1
12	A	Bulls	100	2	1		1	
12	C	Bulls	100	2	1			1
12	C	Steers	20	1		1		
12	E	Steers	100	2		2		
12	F	Steers	100	4	1	2	1	

E. Movements off

Table A2.9: Percentage of animals moved off (as a percentage of the numbers of animals of that type recorded in Tables A2.2 and A2.3) and numbers and seasonality of consignments for movements off for typical enterprises for each beef region and production sector.

Region	Sector	Cattle type	% of relevant population moved off	Number of consignments				
				Total	Summer	Autumn	Winter	Spring
1	B	Cows	10	2			1	1
1	B	Heifers	35	2			1	1
1	B	Bulls	20	2			1	1
1	B	Steers	50	2			1	1
1	D	Bulls	20	2			1	1
1	D	Steers	100	3			2	1
2	A	Bulls	15	2		1	1	
2	A	Steers	100	2		1	1	
2	A	Cows	15	2		1	1	
2	A	Heifers	31	2		1	1	
2	B	Bulls	15	2		1	1	
2	B	Steers	50	2		1	1	
2	B	Cows	15	2		1	1	
2	B	Heifers	31	2		1	1	
2	C	Bulls	15	2		1	1	
2	C	Steers	100	3		1	1	1
2	C	Cows	15	2		1	1	
2	C	Heifers	31	2		1	1	
3	B	Cows	5	1			1	
3	B	Heifers	25	2			2	
3	B	Bulls	15	2			1	1
3	B	Steers	100	3			2	1
4	A	Cows	10	5			2	3
4	A	Heifers	30	2			1	1
4	A	Bulls	10	1			1	
4	A	Steers	80	3			1	2
5	B	Cows	28	3		2	1	
5	B	Heifers	14	2		1	1	
5	B	Bulls	20	2		1	1	
5	B	Steers	49	2		2		
5	C	Cows	20	3		2	1	
5	C	Heifers	20	2		1	1	
5	C	Bulls	20	2		1	1	
5	C	Steers	33	3		2	1	

Structure and Dynamics of the Australian Beef Cattle Industry

Table A2.9 (con)

Region	Sector	Cattle type	% of relevant population moved off	Number of consignments				
				Total	Summer	Autumn	Winter	Spring
6	B	Cows	14	2	1	1		
6	B	Heifers	20	1		1		
6	B	Bulls	10	1			1	
6	B	Steers	45	4	2	2		
6	C	Cows	14	2	1	1		
6	C	Heifers	20	1		1		
6	C	Bulls	10	1			1	
6	C	Steers	45	4	2	2		
6	E	Steers	85	20	5	5	5	5
6	F	Steers	100	250	62	62	62	64
7	A	Cows	15	1		1		
7	A	Heifers	20	1		1		
7	A	Bulls	25	1		1		
7	A	Steers	100	2	1	1		
7	B	Cows	15	1		1		
7	B	Heifers	20	1		1		
7	B	Bulls	25	1		1		
7	B	Steers	100	2	1	1		
7	C	Cows	15	1		1		
7	C	Heifers	20	1		1		
7	C	Bulls	20	1		1		
7	C	Steers	100	3	1	1		1
7	F	Steers	100	52	13	13	13	13
8	A	Cows	20	1	1			
8	A	Heifers	25	2	1			1
8	A	Bulls	25	1	1			
8	A	Steers	100	2		2		
8	B	Cows	20	1	1			
8	B	Heifers	35	2	1			1
8	B	Bulls	20	1	1			
8	B	Steers	100	2	1	1		

Structure and Dynamics of the Australian Beef Cattle Industry

Table A2.9 (con)

Region	Sector	Cattle type	% of relevant population moved off	Number of consignments				
				Total	Summer	Autumn	Winter	Spring
9	A	Cows	10	2			1	1
9	A	Heifers	10	2			1	1
9	A	Bulls	10	1			1	
9	A	Steers	100	2			2	
9	B	Cows	10	2			1	1
9	B	Heifers	10	2			1	1
9	B	Bulls	10	1			1	
9	B	Steers	100	3			3	
9	C	Cows	20	1				1
9	C	Heifers	20	1				1
9	C	Bulls	20	1				1
9	C	Steers	100	2				2
9	D	Cows	20	1			1	
9	D	Heifers	20	1			1	
9	D	Bulls	20	1				1
9	D	Steers	100	2				2
9	E	Steers	100	3			1	2
9	F	Steers	100	6	1		3	1
10	A	Cows	28	2	1		1	
10	A	Heifers	40	2			2	
10	A	Bulls	33	2				2
10	A	Steers	100	2	2			
10	B	Cows	28	2			2	
10	B	Heifers	40	2			2	
10	B	Bulls	33	1				1
10	B	Steers	100	2	2			
10	C	Cows	28	2			2	
10	C	Heifers	40	2			2	
10	C	Bulls	33	1				1
10	C	Steers	100	4	2		1	1
10	E	Steers	100	4	1		1	2
11	A	Cows	10	2	1		1	
11	A	Heifers	20	1				1
11	A	Bulls	25	1	1			
11	A	Steers	100	2	1			1
11	B	Cows	10	2	1		1	
11	B	Heifers	20	1				1
11	B	Bulls	25	1	1			
11	B	Steers	100	2	1			1
11	E	Steers	100	4	2		2	
11	F	Steers	100	8	2		2	2

Structure and Dynamics of the Australian Beef Cattle Industry

Table A2.9 (con)

Region	Sector	Cattle type	% of relevant population moved off	Number of consignments				
				Total	Summer	Autumn	Winter	Spring
12	A	Cows	20	1	1			
12	A	Heifers	30	1	1			
12	A	Bulls	25	1			1	
12	A	Steers	100	2	1		1	
12	C	Cows	20	1	1			
12	C	Heifers	40	1	1			
12	C	Bulls	25	1			1	
12	C	Steers	100	2	1		1	
12	E	Steers	100	3	2		1	
12	F	Steers	100	4	1		2	1

Structure and Dynamics of the Australian Beef Cattle Industry

Table A2.10: Percentage of producers in each region and sector who send cattle on agistment at specified frequencies

Region	Sector	Many times/year	Every/most years	Drought only	Never
1	B				100
1	D				100
2	A		25	35	40
2	B		25	35	40
2	C		25	35	40
3	B				100
4	A			25	75
5	B	2	3	30	65
5	C	2	3	30	65
6	B			75	25
6	C			75	25
6	E				100
7	A			70	30
7	B			70	30
7	C			70	30
7	F				100
8	A			30	70
8	B			30	70
9	A	10		90	
9	B			100	
9	C			100	
9	D		50	50	
9	E				100
9	F				100
10	A			20	80
10	B			20	80
10	C			20	80
10	E				100
11	A			10	90
11	B			10	90
11	E				100
11	F				100
12	A			100	
12	C			100	
12	E			100	
12	F				100

Structure and Dynamics of the Australian Beef Cattle Industry

Table A2.11: Season and destination region for cattle sent to agistment from each sector and region

Region	Sector	Destination Region	Summer	Autumn	Winter	Spring
1	B	6			Yes	
2	A	2		Yes		
2	A	6		Yes		
2	B	2		Yes		
2	B	6		Yes		
2	C	2		Yes		
2	C	6		Yes		
4	A	6			Yes	
5	B	5	Yes	Yes		
5	B	6	Yes	Yes		
5	C	5	Yes	Yes		
5	C	6	Yes	Yes		
6	B	6			Yes	
6	B	3			Yes	
6	C	6			Yes	
6	C	3			Yes	
7	A	6		Yes		
7	A	8		Yes		
7	B	6		Yes		
7	B	8		Yes		
7	C	6	Yes		Yes	
7	C	8	Yes		Yes	
8	A	6		Yes		
8	A	9		Yes		
8	B	6		Yes		
8	B	9		Yes		
9	A	9	Yes	Yes		
9	B	9	Yes	Yes		
9	B	10	Yes	Yes		
9	C	9			Yes	
9	C	10			Yes	
9	D	9	Yes			
10	A	8	Yes	Yes	Yes	
10	A	9	Yes	Yes	Yes	
10	A	10	Yes	Yes	Yes	
10	A	7	Yes			
10	B	8	Yes	Yes	Yes	
10	B	9	Yes	Yes	Yes	
10	B	10	Yes	Yes	Yes	
10	C	7	Yes	Yes	Yes	
10	C	8	Yes	Yes	Yes	
10	C	9	Yes	Yes	Yes	
11	A	11	Yes	Yes		
11	B	11	Yes	Yes		
12	A	Unpredictable		Yes	Yes	
12	C	Unpredictable		Yes	Yes	
12	E	Unpredictable	Yes	Yes		

