THE UNIVERSITY OF MELBOURNE

Melbourne Veterinary School

5.4 Beef production systems

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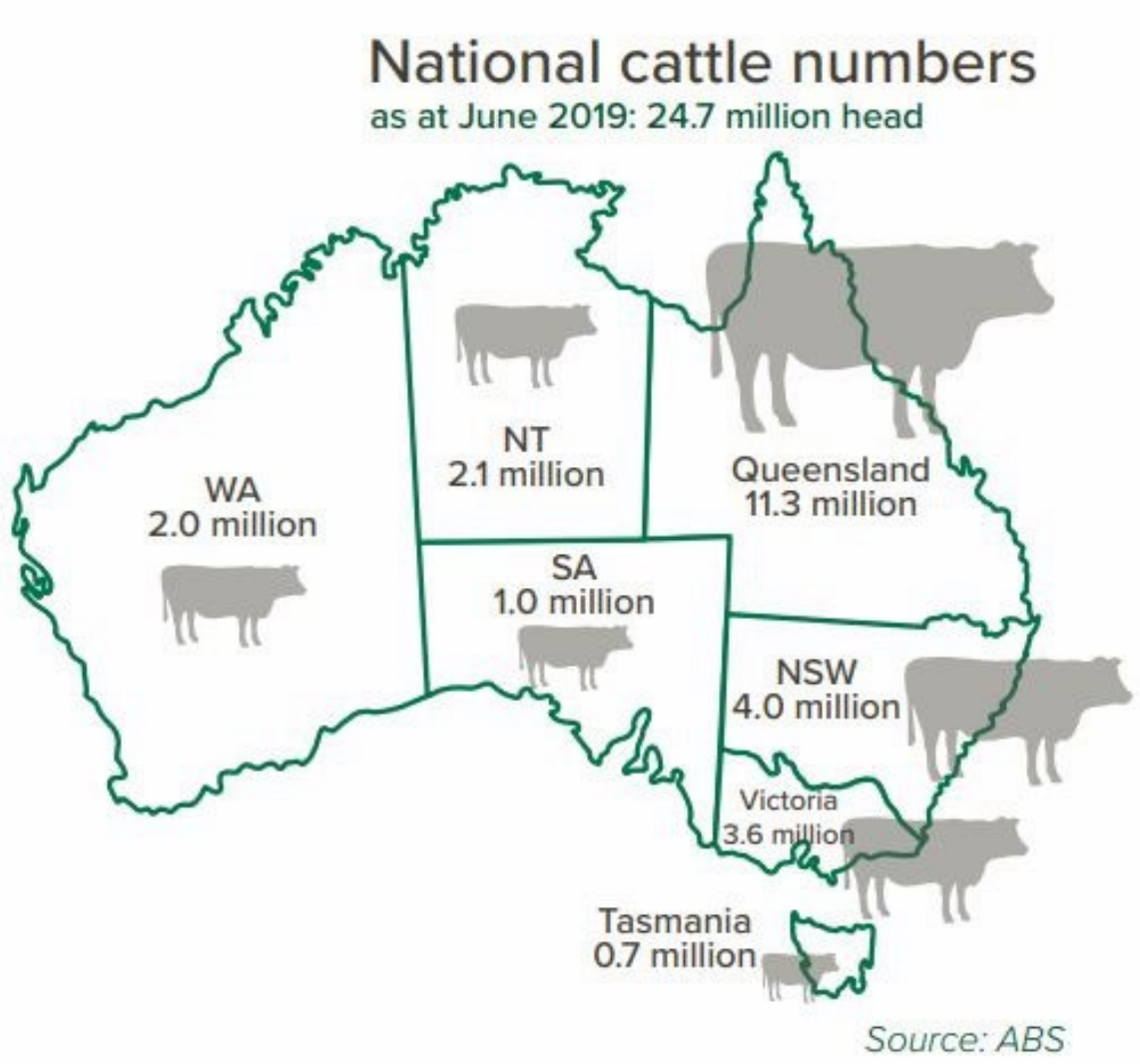
Beef system to fit environment

- Australia is a large country with differing environmental zones
- Soil type, rainfall, irrigation, temperature etc that impact pasture growth and type of pasture
- Cant assume because a system works well in southern Australia that it would work well in northern Australia



Bos taurus versus *Bos indicus*

- Further north you go in Australia more likely to find *Bos indicus* type cattle e.g. Brahman

- Ears
- Hump
- Dewlap
- Sheath and navel depth (scores for this)
- Coat (hairy versus less hairy)
- Not visually obvious but Brahman can kick higher

Breeds of cattle by group

- Cattle breeds often classified by origin or temperate/tropical types
  - British Breed
  - European Breed
  - Tropical
  - Other
- Breeds will be covered in image form after this video
- Important to be able to identify breeds so you avoid calling them the wrong breed in front of owner

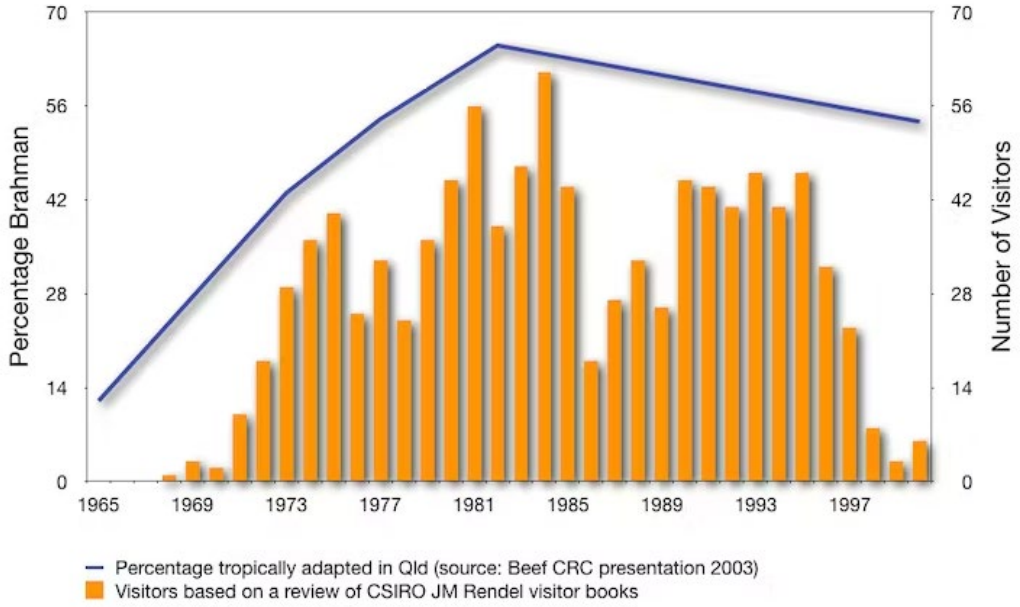
British Breeds

- First cattle imported into Australia, not native

- "The first European settlers arrived in 1788 with six head of cattle. The Year Book Australia 1901-07 records:... during the years immediately succeeding the first settlement, the growth of the number of livestock was slow and notwithstanding importations from India and the Cape of Good Hope, the total of the herd amounted in 1800 to 1,044 cattle. During the next fifty years, however, the pastoral industry made rapid strides and at the end thereof (1850) the total reached 1,894,834.This growth was to continue for the next 50 years and by 1900 the beef cattle herd had climbed to 8.6 million head." from https://www.abs.gov.au/AUSSTATS/abs@.nsf/Previousproducts/1301.0Feature%20Article232005

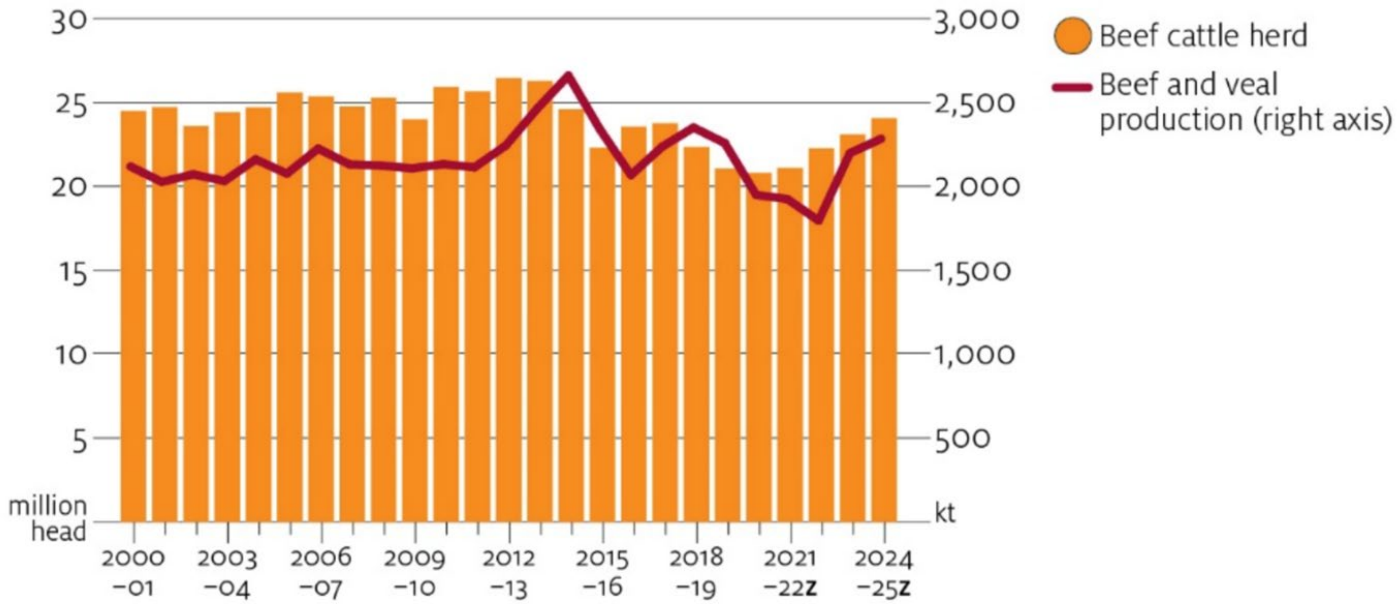
Arrival of *Bos indicus*

- Brahmans arrived in QLD in 1930s via CSIR
- Better able to cope with heat and ticks
- Brahman genetics in approximately 50% of national herd, mostly in northern half of the continent
- More than 70% of bulls north of tropic of Capricorn are Brahman infused
- Gilruth was responsible for original recommendation (Gilruth library at Werribee)
- Importance of extension (graph) - Belmont



Total Australian beef herd

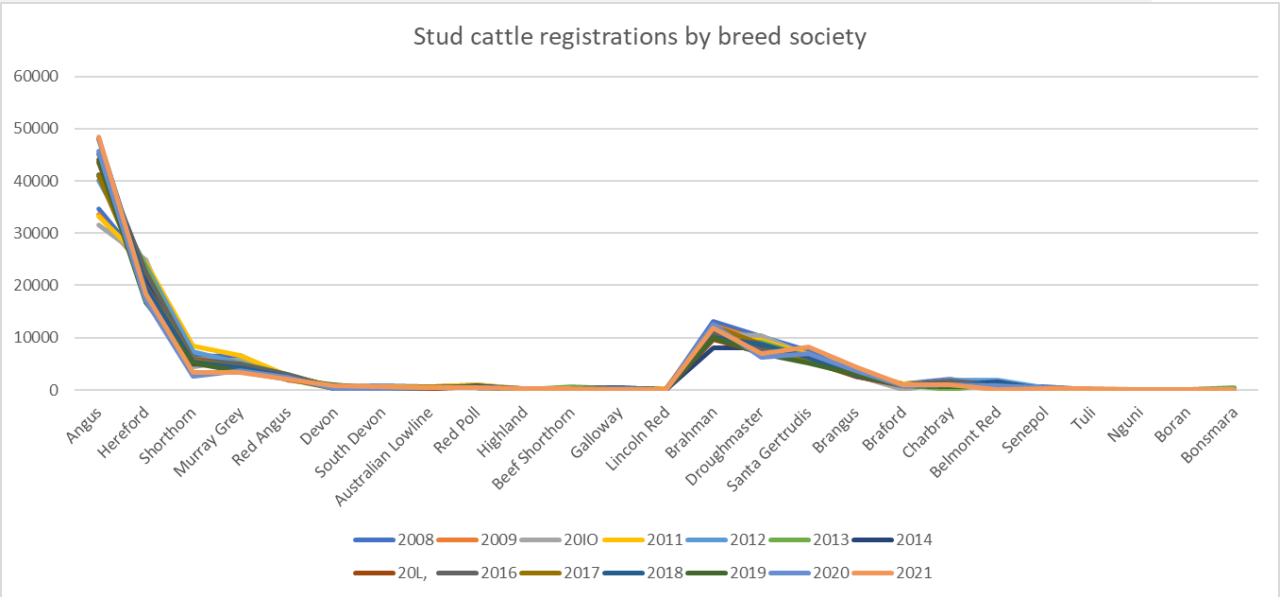
Australian beef herd and beef production, 2000–01 to 2024–25



z ABARES projection.
Source: ABARES; ABS

How many of each breed?

- How do we work this out?
- Stud versus commercial numbers?
- Very small percentage of total



Compiled by: Australian Registered Cattle Breeders' Association Inc.

		Breed Society	2021 Primary Regns	2021 Secondary Regns	2021 Total Regns	% of Regns
*	1.	Angus Society of Australia	49,488	21,272	**70,760**	32.11%
Δ	2.	Australian Brahman Breeders Association	11,918	21,169	**33,087**	15.01%
•	3.	Australian Wagyu Association	20,141	6,567	**26,708**	12.12%
*	4.	Herefords Australia	18,317	1,177	**19,414**	8.84%
+	5.	Santa Gertrudis Breeders (Aust.) Assoc.	7,015	8,932	**15,938**	7.23%
	6.	Droughtmaster Stud Breeders Society Ltd	8,161	1,676	**9,837**	4.46%
ø	7.	Charolais Society of Australia	7,762	510	**8,272**	3.75%
*	8.	Australian Brangus Cattle Association	4,374	2,286	**6,660**	3.02%
*	9.	Australian Simmental Breeder's Assoc. Ltd	4,867	452	**5,319**	2.41%
ø	10.	Australian Limousin Breeders Society Ltd	4,848	331	**5,179**	2.35%
*	11.	Speckle Park International	3,349	1,158	**4,507**	2.04%
	12	Shorthorn Beef	3,395	0	**3,395**	1.53%
*	13.	Murray Grey Beef Cattle Society	3,265	55	**3,320**	1.51%
*	14.	Red Angus Beef Cattle Society of Australia	2,032	223	**2,255**	1.03%
*	15.	Belmont Red Association of Aust.	1,329	11	**1,340**	0.61%
•	16.	Charbray Society of Australia	1,038	0	**1,038**	0.47%
ø	17.	Australian Braford Society	957	80	**1,037**	0.47%
ø	18.	Devon Breeders Society of Australia	804	111	**915**	0.42%
•	19.	Fleckvieh Society of Australia	865	0	**865**	0.39%
•	20.	Australian Lowline Cattle	389	168	**657**	0.27%
•	21.	South Devon Cattle Society of Australia Inc.	548	31	**579**	0.26%
*	22.	Australian Red Poll Society	369	0	**369**	0.17%
*	23.	Australian Gelbvieh Association	342	8	**350**	0.16%
•	24.	Australian Highland Cattle Association	320	0	**320**	0.13%
*	25.	Blonde d'Aquitaine Society of Australia	271	13	**284**	0.12%
*	26.	Australian Senepol Cattle	280	0	**280**	0.12%
•	27.	Beef Shorthorn Society of Australia	271	0	**271**	0.12%
•	28.	British White Cattle Society	246	0	**246**	0.11%
ø	29.	Australian Galloway Association	242	0	**242**	0.10%
•	30.	Australian Bazadais Cattle Society Inc.	126	32	**158**	0.06%
ø	31	Australian Salers Association	34	104	**138**	0.06%
*	32.	Romagnola Breeders' Society	129	2	**131**	0.05%
•	33.	Lincoln Red	110	0	**110**	0.04%
•	34.	Chianina	67	0	**67**	0.02%
•	35	Maine Anjou Beef Cattle Breeders Aust. Ltd.	54	0	**54**	0.02%
•	36.	Bazadaise Breeders of Australia Inc	14	0	**14**	0.00%
•	37.	Belgian Blue	14	0	**14**	0.00%
		Total for 35 breed societies	**158,099**	**66,362**	**224,461**	100.00%

Registration system codes: • Traditional; * Female Inventory only; ø Female Inventory Combination;
Δ Brahman system; + Santa Gertrudis system; ++ Electronic. **Estimated number of registrations

Why so many breeds?

- When we talk dairy cattle very limited breeds, but also in very defined area
- Range of niche markets for beef and range of environments
- Lower infrastructure costs for beef
- Shifts in preferred beef breed type over time – significant change to black cattle
- British breed registrations dominated by Angus, Hereford, Shorthorn, Murray Grey and Red Angus
- Tropical breed registrations by Brahman, Droughmaster, Santa Gertrudis, Brangus
- New breeds include Speckle Park that has increased rapidly
- Very helpful to be able to identify breeds
- Have a look at breed website (link on LMS following this)
- Far more breeds than those listed here – have a look at

https://breeds.okstate.edu/cattle/index.html

% *Bos indicus* and *Bos taurus* and crossbreeds

- Not all cattle are purebred
- Crossbred has a number of potential benefits
- Can crossbreed between *Bos indicus* and *taurus* (technically subspecies)
- Can vary percentage of Bos indicus to environment e.g. common to have 3/8th or 5/8th Bos indicus (Brangus, Braford, Charbray etc), lower percentage further south
- Crossbreeding utilises hybrid vigour
- Simple two breed cross or can be far more complex with long term multiple breed program

Crossbreed example

- Use an Angus mated to a Hereford (or vice versa) to produce a “black baldy” – black cow with white face
- Often on Angus herds may join young female first few times to Angus and then to terminal sire such as Charolais – all progeny from that mating to be sold ie none kept as replacements
- Most commonly see 3 or maybe 4 breeds maximum in breed program

Table 1. Expected retention of heterosis (%) and estimated increase in performance as a result of heterosis for various crossbreeding systems (at stabilisation)

Crossbreeding System	% of maximium heterosis	Estimated increase in calf weight weaned per cow exposed
Straightbreds		
3-breed cross	100.0	23.3
2-breed rotation	66.7	15.5
3-breed rotation	85.7	20.0
Two-breed composite:		
1/2A, 1/2B	50.0	11.6
5/8A, 3/8B	46.9	10.9
3/4A, 1/4B	37.5	8.7
Four-breed composite:		
1/4A, 1/4B, 1/4C, 1/4D	75.0	17.5
1/2A, 1/4B, 1/8C, 1/8D	65.6	15.3
Six-breed composite:		
1/4A, 1/4B, 1/8C, 1/81D, 1/8E, 1/8F	81.3	18.9

Source: Gregory and Cundiff (1980). Journal of Animal Science 51:1124.