Performance of supply chain options for beef producers

A case study based in Western Australia

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BeefLinks research

- UWA/ MLA funded program, large program, multiple partners and researchers focused on rangeland cattle:
  - better understanding of critical control points across the supply chain
  - identification of best-practice, practical strategies for the management and movement of cattle
  - demonstrations, training opportunities and engagement with people and organisations across the WA supply chain.
- Phil Vercoe, Fay Rola-Rubzen, Asjad Shiekh, Montana Walsh Baddeley, Tammie Harold

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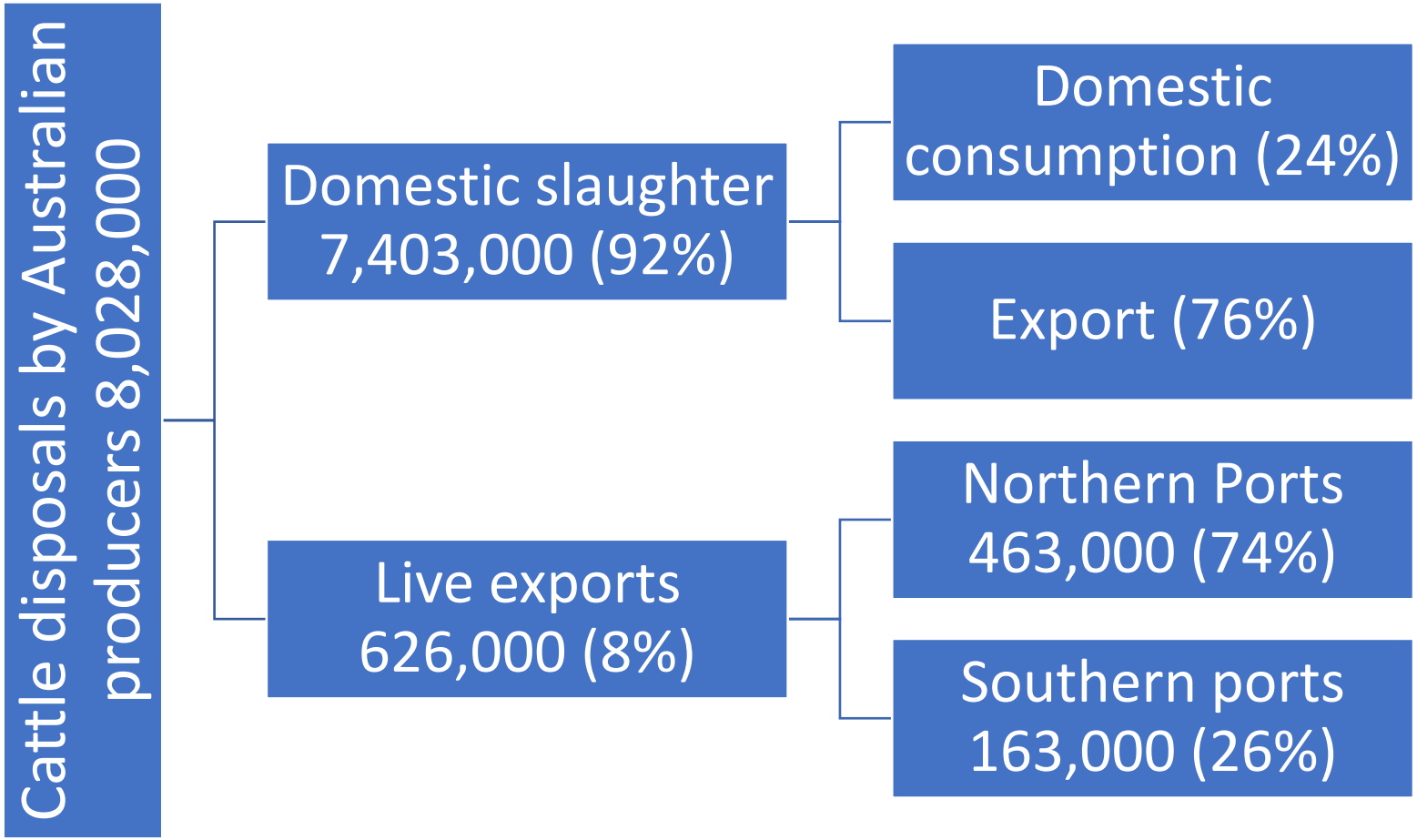
Australia cattle data (2023, DPIRD)



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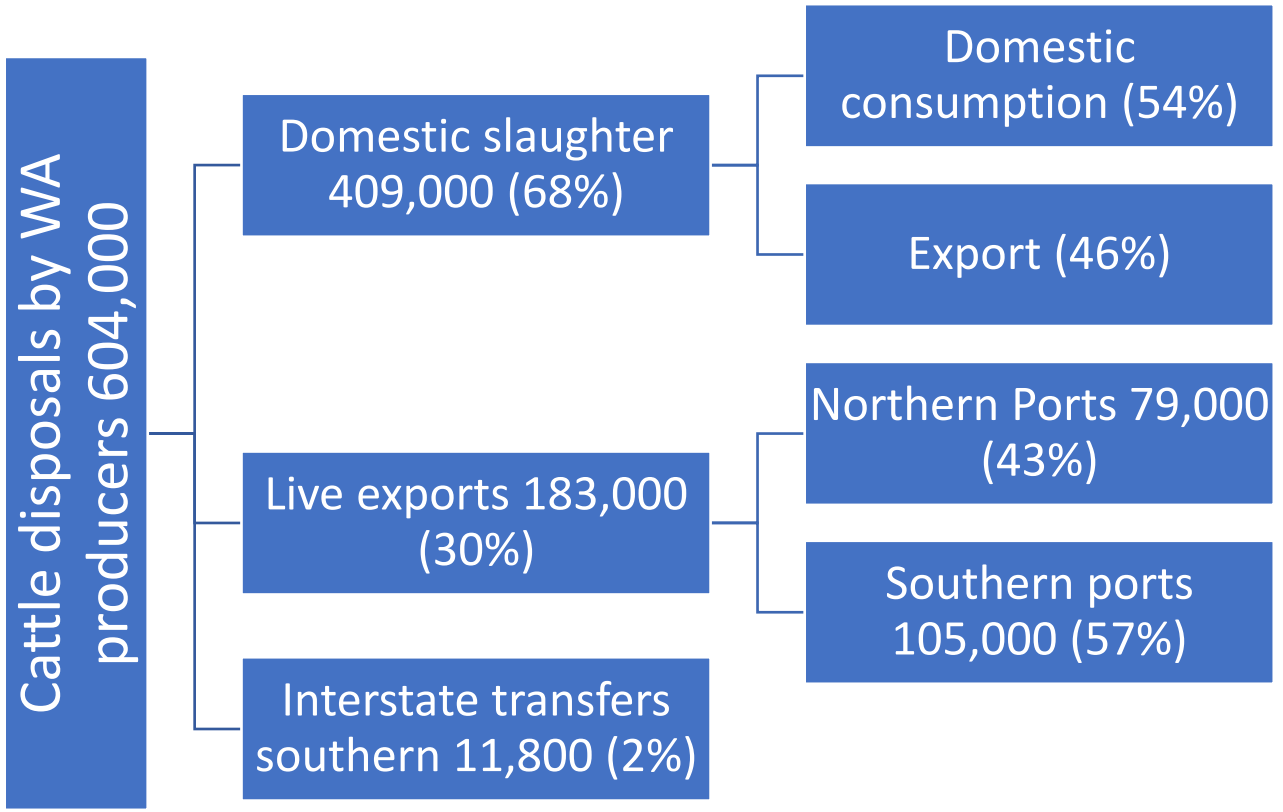
WA cattle data (2023, DPIRD)

- Gap in movements east – WA to NT (Waybill data), then QLD
- Gap in northern and southern movement into abattoir
- Gap in feedlots, can be sourced from lot feeders



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Backgrounding in WA

- “grouping and acclimatization of animals before entry into the feedlot or intensive finishing system”
- “stop-off” for Northern cattle on way to southern market/ feedlots
- Improved nutrition from higher quality green feed, such as pastures/ grass
- Closer access to markets = shorter transport = more flexibility with selling options
- Does it return value for money?

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Preparing cattle for transport

- Shrinkage (weight loss) can occur during transport
- Caused mostly by stress, which can also affect meat quality
- % shrinkage varies, 8-13%
- Scientific studies and anecdotal reports suggest preparing cattle can reduce shrinkage
- A variety of practices can be used
  - Pressure-release handling
  - Feeding pre/ post transport
  - Pre/ post health check
- Does it return value for money?

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Beef Economic Evaluation Framework

- Whole-farm budget spreadsheet tool in MS Excel
- Economic evaluation of farm enterprise and management, at each production stage
- Enterprise information
  - Station characteristics eg area, infrastructure
  - Herd composition eg breed, class, weight
  - Number cattle sold
  - Mortality, shrinkage, weaning rate
- Market price/ kg, proportion of turn-off for each market
- Fixed costs eg infrastructure, rates
- Management information eg effectiveness, variable costs
- Other revenue streams

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Data collection – real businesses

- A high level of engagement with producers and experts
- Integration of diverse information types into one framework
- Ability to include current knowledge in a management context
- A strong focus on decision making
- Transparency of assumptions and their impacts on outcomes
- Identifies and deals with knowledge gaps and uncertainties
- Sensitivity analysis, tease out the consequences from data variation

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Partial budget analysis

- Changes to revenue and costs for new markets/ management
- Benefit to cost ratio, expected benefits per dollar spent
- BCR = Gross revenue/ Total Costs (Variable)
- Gross revenue = market receipts (# cattle x $/kg x kg)
- Variable costs are directly linked to cattle production
- BCR > 1, benefits outweigh costs

Partial budget analysis

Following results are BCRs for two case studies:

#1 Southern Rangelands/ Southern Agricultural Zone

- Pastoral station to various markets.
- Pastoral station to backgrounding property to various markets.
- Pastoral station to feedlot to various markets.
- Using de-stressing practices prior to transport to various markets.

#2 Northern Rangelands

- Pastoral station to various markets.
- Using de-stressing practices prior to transport to various markets.

Case study #1

- 2,300ha used for backgrounding Droughtmaster, Brahman and Shorthorn
- One mob analysed
- 120 yearling heifers and steers are sold annually
- Yearling heifers (250 kg/head) and steer (350 kg/head)
- Annual and perennial pastures
- ADG 0.3kg/day in summer and 0.9kg/day in winter

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Case study #1 Station to markets

- 250kg to 350kg liveweight
- $4.10 liveX, $3.27 saleyard, $5.80 abattoir
- Live Export: BCR 1.14
- Saleyard: BCR 0.92
- Abattoir: BCR 1.58*

*Realistically, abattoir specs may not match liveweight

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Case study #1 Via backgrounding

- Target weight 100 kg/head in 25 weeks
- 350kg to 450kg liveweight
- $4.10 liveX, $3.27 saleyard, $5.80 abattoir
- Agistment cost $5/hd/wk, vet fees, feeding
- Live Export: BCR 1.33
- Saleyard: BCR 1.07
- Abattoir: BCR 1.83

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Case study #1 Via feedlot

- Target weight 150kg/ head in 100 days
- 500kg to 600kg finished steers
- $4.10 liveX, $3.27 saleyard, $5.80 abattoir
- Consignment feeding costs
- Live Export: BCR 1.16
- Saleyard: BCR 0.91*
- Abattoir: BCR 1.57

*not a typical selling option after feedlot

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Case study #2

- Northern Rangelands
- 586,000ha used for breeding Brahman x Shorthorn
- 5,400 sold annually, range of animal class
- 300kg to 500kg weight range
- ADG 0.3kg/day in dry season and 0.5kg/day in wet season

Case study #2 LiveX + abattoir

- Combination of markets
- 70% liveX and 30% abattoir
- $1.38/kg liveX, $2.80/kg abattoir
- BCR 1.17

- Pastoralist estimates 5% shrinkage during transport
- 400kg average weight, 59kg lost to shrinkage

De-stressing cattle

- Case study 1 and 2
- Cattle management costs
  - Handling and training young cattle - labour
  - Additional water and hay
- Effectiveness of practices
- 14kg/hd and 59kg/hd saving after transport
- Very little difference in BCR
- We didn’t account for intangible benefits

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Animal welfare

- Recent survey 1,000 WA beef consumers
- Online recruitment

"Which practices must be done for the Western Australia beef industry to be considered "humane" and "environmentally sustainable"?"

- Defined a set of animal welfare and environmental objectives that a producer could do in their business
- Asked consumers to make choices, least/ most important
- All animal welfare objectives preferred to environmental

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Results summary

- Using a finishing system is a worthwhile investment
- Returns from backgrounding outperform feed lotting
- Didn’t account for other benefits and costs eg reducing feed pressure
- Implementing de-stressing practices doesn’t change benefit/ dollar
- Contributes to animal welfare outcomes, which consumers care about

Caveats

- Real data from cattle enterprises in WA
- Assume cattle can access all markets at time of sale
- Economic results are only one part of decision making
- Haven't included price risk over the finishing period
- Sensitivity analysis didn’t change findings
- Considered 20% values change, which is too low

Thank you

Producers and industry experts who helped us understand the north/ south supply chain, collect data and validate our results

For further questions or information on our pastoral cattle projects please contact

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Breedcow, MLA CoP and BEEF

Items	BEEF	MLA cost of production tool	Breedcow+
Timeframe	Yearly	Yearly	Yearly
Purchase of cattle	Yes	Yes	Yes
Outstanding stock	Yes	No	No
Breeding cycle of cows	No	No	Yes
Distribution of sales across markets by specific group of cattle	Yes	No	No
Distances between the cattle's location and each specific market	Yes	No	No
Flexibility in specifying various fixed and variable costs	Yes	No	No
Unit cost of cost items	Yes	No	Yes
Annualized fixed costs	Yes	No	No
Multiple production phases and the corresponding potential markets	Yes	No	No
ROI	Yes	No	No
BCR	Yes	No	No
Margin	No	Yes	Yes

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