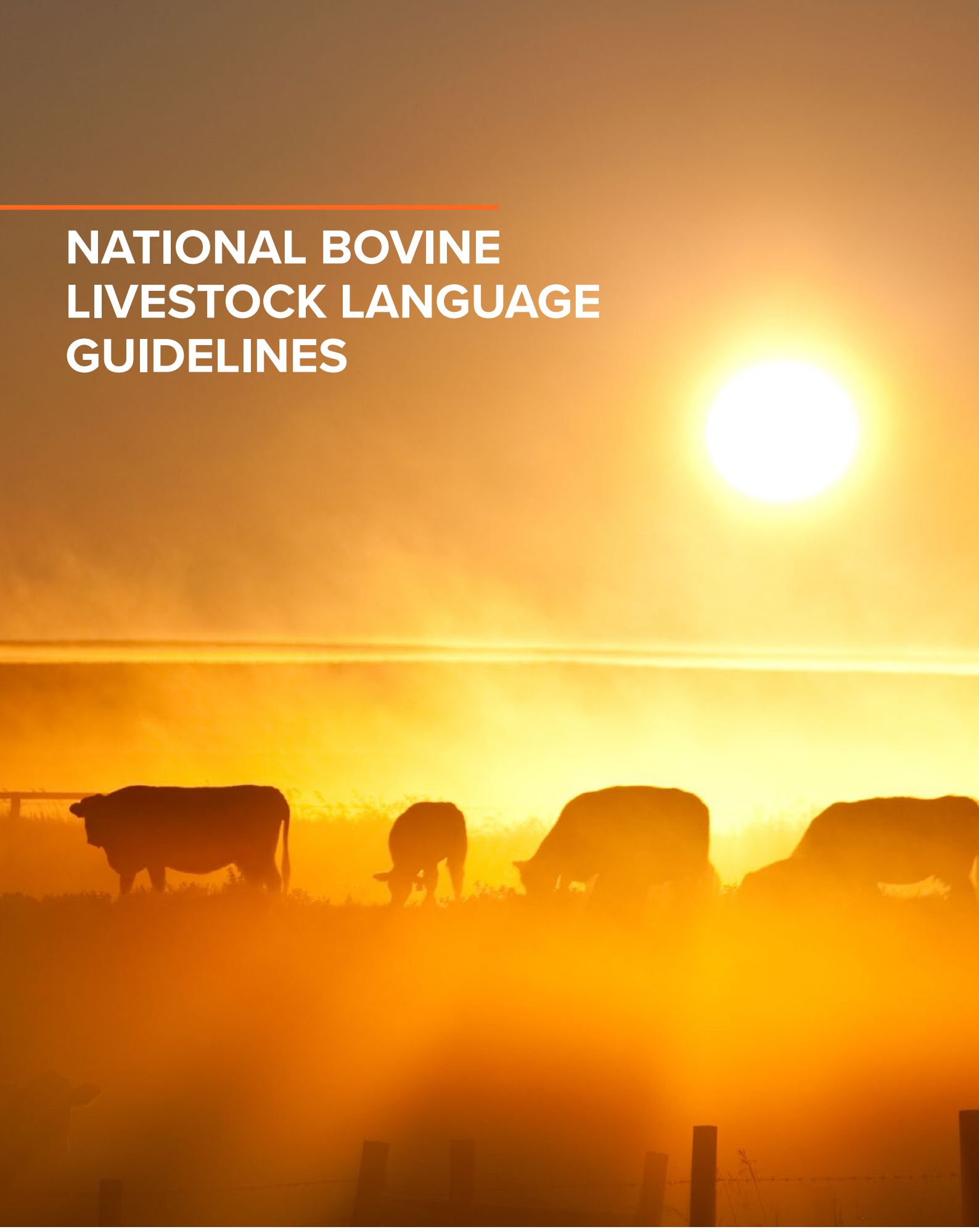
NATIONAL BOVINE LIVESTOCK LANGUAGE GUIDELINES



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FOREWORD

The Bovine Livestock Language presents Guidelines for the standardised terms applied as descriptors of bovine livestock.

The development of the National Bovine Livestock Language Guidelines was initiated through recommendations provided in the Beef Language Review White Paper, published in 2017 and endorsed by the Australian cattle industry.

These Guidelines are intended to foster the consistent application of descriptors of bovine livestock that connect to the carcase language and align to consumer meal language to ultimately support the prosperity of the Australian beef industry.

Where possible we should endeavour to use common terminology from the property of origin, right through the chain, to the international consumer where such terms can be linked through existing AUS-MEAT Language and UNECE (United Nations Economic Commission for Europe) international code.

A uniform and harmonised Language provides the opportunity for:

- higher rates of genetic and herd improvement in cattle, including crossbreds. An increased rate of improvement provides the major opportunity to close the efficiency gap with chicken, pork or emerging proteins.
- Improved communication up and down the value chain, providing greater clarity of market signals, supporting better decision making and accelerating efficiency gains.
- Substantial improvement in description and valuation of cattle is possible to improve industry performance by improved targeting of end market points and reduced non-compliance to market specifications.
- Acknowledging and building on Industry programs link raising claims

The Red Meat Advisory Council (RMAC) provides oversight of the implementation of recommendations of the Beef Language Review White Paper. The recommendation of a Livestock Language Review was conducted by an independent Expert Group appointed by an industry steering committee. This Group has developed the National Bovine Livestock Language Guidelines through a rigorous and extensive process of industry consultation.

The Australian Meat Industry Language and Standards Committee (AMILSC) are the custodians of the National Livestock Language Guidelines, on behalf on the meat and livestock industry.

CONTENTS

1. INTRODUCTION

Purpose

The Bovine Livestock Language presents Guidelines for the standardised use of descriptors of bovine livestock. These Livestock Language Guidelines are intended to foster the consistent application of descriptors of bovine livestock that connect to the carcase language and align to consumer meal language to ultimately support the prosperity of the Australian beef industry.

Scope

The Livestock Language Guidelines provide standardized definition, description and assessment methodologies for the key attributes that are used to describe livestock through production phases and trading environments for the purpose of store, breeding, feeder or finished cattle. The Guidelines cover both beef and dairy cattle where they are utilised for beef. This encompasses beef animals of dairy origin – animals produced on dairy farms that were either never intended or are no longer intended for milking. This includes cull cows and young stock not intended as milking herd replacements.

Ownership

The Livestock Language Guidelines are provided to the cattle industry with the endorsement of the Australian Meat Industry Language and Standards Committee (AMILSC), and intended to be the source of standard terms used in the description of bovine livestock. The Guidelines will continue to evolve as technological advances occur in data systems as well as the emergence and industry adoption of objective measurement technologies that may change how and which traits are measured or used in livestock description.

The Livestock Language Guidelines will be housed within the auspices of AUS-MEAT Limited and amendments to the Livestock Language Guidelines will be reviewed by the AMILSC.

Industry structure

The Australian red meat industry is comprised of more than 77,000 businesses operating across the supply chain, including producers, livestock exporters, livestock agents, lot feeders, processors, manufacturers, retailers and trading platforms.

The Australian Government sets high-level research and development priorities covering community, industry and environmental concerns. This is done through its Science and Research Priorities and the Rural Research, Development and Extension Priorities.

Peak industry councils provide policy and strategy direction on behalf of the red meat and livestock industry. These are the Australian Meat Industry Council, Australian Livestock Exporters' Council, Australian Lot Feeders' Association, Cattle Council of Australia, Goat Industry Council Australia and Sheep Producers Australia.

Service providers to the industry that conduct research and marketing activities include the Australian Meat Processor Corporation, LiveCorp and Meat & Livestock Australia. Individually and collectively they develop programs that address key industry issues and opportunities through the supply chain, manage projects and communicate outcomes.

Figure 1. Red meat industry structure

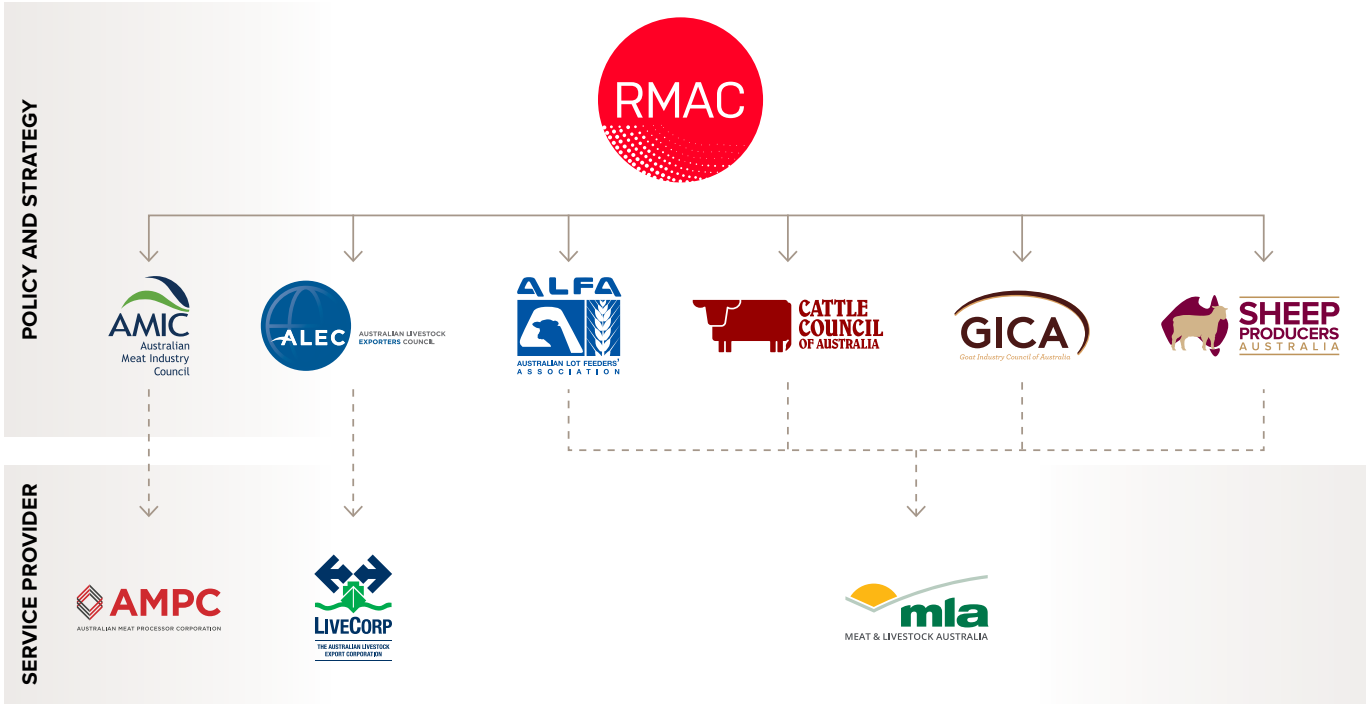
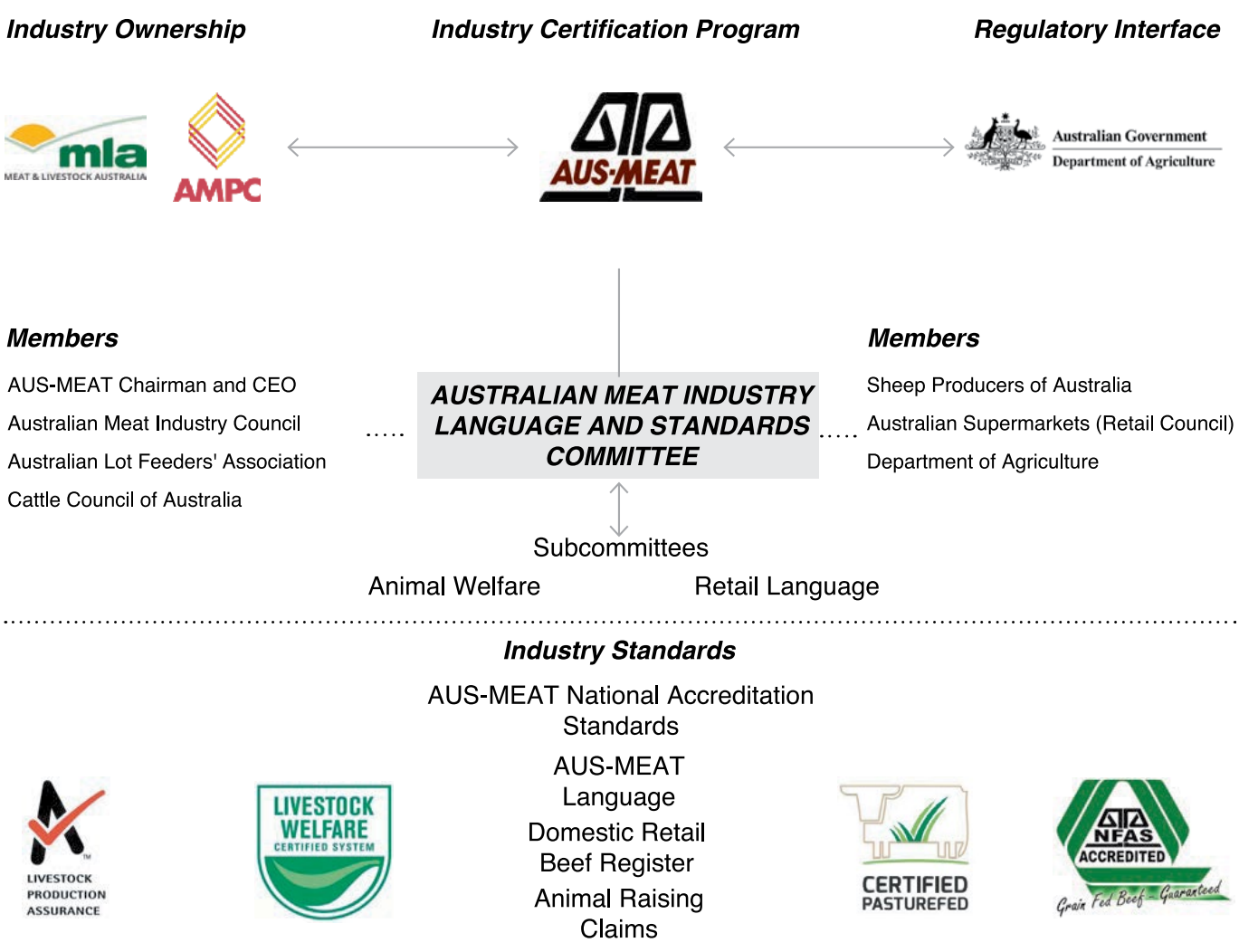


Figure 2. Industry structure for the management of Industry Standards



Using the guidelines

The Livestock Language Guidelines are intended to provide a single reference point for users of livestock descriptors and associated data. This can provide a consistent dialogue and clarity along the entire supply chain.

There are three key elements to the Guidelines:

1. Standardised trait descriptions

Each trait described in the Guidelines will provide, where applicable:

- Definition
- Purpose of trait
- Measurement technique
- Measurement system, terms or codes

2. Glossary of terms

The glossary covers a wide range of commonly used terms used to describe livestock from conception to consumption. Where terms are considered redundant in the modern livestock industry, these are identified as recommended for cessation of use.

3. Guidelines Supplement

The Supplement provides additional information supporting identified areas of the Livestock Language Guidelines. This information expands upon these areas to provide further guidance on the use of the Language.

2. TRACEABILITY

Definition

The Australian beef industry relies on the National Livestock Identification System (NLIS) to provide the individual animal identification and the Livestock Production Assurance (LPA) National Vendor Declaration (NVD) to underpin tracing the movement of animals during their life.

A Property Identification Code (PIC) is an eight-character code allocated by the State departments of agriculture or an equivalent authority in each state or territory to identify a livestock-producing property. Producers must have a PIC to move livestock on and off a property. The PIC is the foundation of Australia's food safety and traceability programs. The NLIS program relies on PICs to ensure traceability through the supply chain.

Purpose

The Integrity Systems Company (ISC) is a wholly owned subsidiary of Meat & Livestock Australia (MLA). ISC manages and delivers the Australian red meat industry's three key on-farm assurance and through-chain traceability programs:

- Livestock Production Assurance (LPA) program
- LPA National Vendor Declarations (LPA NVD)
- National Livestock Identification System (NLIS)

Together, these three elements, along with Meat Messaging, underpin the food safety and traceability of Australian red meat for our domestic and international customers and protect Australia's access to over 100 export markets.

Information on these programs is found at www.integritysystems.com.au

Post-processing market access considerations.

NLIS and NVD are fundamental and crucial for continued through chain traceability and the creation of downstream documentation to facilitate end market destination requirements e.g. Raising Claims, Industry Programs, eMTC (Electronic Meat Transfer Certificate), RFP (Request for Permit), Health Certificate.

Integrity of claims, traceability of product and accurate documentation is a vital component of Australia's overseas market access that is crucial to an industry that exports 70% of its production into volatile world markets.

Measurement technique

a. National Livestock Identification System (NLIS)

The NLIS is Australia's system for the identification and traceability of cattle.

The NLIS combines three elements to enable the lifetime traceability of animals:

1. All livestock are identified by a electronic eartag or approved device.
2. All physical locations are identified by means of a PIC.
3. All livestock location data and movements are recorded in a central database.

As animals are bought, sold and moved along the supply chain, they must be tagged with an NLIS accredited tag or device from their property (PIC) of birth. In most cases this tag will remain with the animal for their entire life and it is illegal to remove this tag.

If tags are lost or become defective then a new NLIS tag can be applied, however if the animal is no longer at its place of birth then a 'post breeder' tag must be used. This indicates that the animal no longer has 'lifetime' traceability.

All cattle leaving a PIC must be identified with an NLIS accredited device before moving. All livestock movements must be recorded on the NLIS database, identifying the 'from' and 'to' PICs for the movement, as well as the individual animals via their NLIS tags (or mobs of animals for mob-based transfers).

Using this information, the NLIS is able to provide a life history of an animal's movements and discern if contact with other livestock occurred. The NLIS is required to facilitate the traceability of animals in accordance with the *National Traceability and Performance Standards*.

b. National Vendor Declaration (NVD)

The Livestock Production Assurance (LPA) National Vendor Declaration (NVD) is a legal document that is key to Australia's red meat traceability and market access. Whilst LPA is a voluntary program, a livestock producer must be accredited with the LPA program to access an NVD. The LPA NVD communicates the food safety and treatment status of every animal as it moves along the value chain – between properties, to saleyards, or to processors. The LPA NVD also acts as movement documentation throughout the value chain.

An LPA eNVD is the digital alternative to paper-based NVDs and is available for LPA accredited producers and feedlots to pass along to their value chain stakeholders to use.

c. Use of DNA

An increasing number of cattle have registered genotypes. Genotyping provides reliable animal identification and likely to become more widely used and increasingly linked to meat production and prediction of eating quality.

Measurement terms

Property of Birth: the property/ land holding on which the animal was born.

Property of Origin: the property/land holding from which the animal was being moved from.

Lifetime Traceable: the animals' movements between properties/ land holdings is traceable since birth.

Traceable once removed: the animals' movements are traceable from the property/PIC they are currently on back to the property of origin.

Confirming Traceability: the NLIS data base which document individual identification numbers are acceptable.

3. SEX

Definition

This section provides basic descriptions for livestock, based on the sex of cattle.

Measurement technique

Determining sexual characteristics – males

Primary Sexual Characteristics (PSC) are determined by assessing the live animal and show the development of genitalia evidenced by thickening or growth of one or more of the following:

- Testicles, sheath, prepuce, penis.

Secondary Sexual Characteristics (SSC) are determined by assessing the live animal or carcase and show the following:

- The advanced development of muscles in the neck and shoulder region.
- A prominent penis stub.
- Well developed scrotum with relatively scarce scrotal fat.
- Well developed inguinal canal.

Measurement terms

Female cattle

TERM	DESCRIPTION	STOCK CODE
HEIFER CALF	Female bovine aged not more than 12 months of age. Also meaning: Weaner heifer	HC
YEARLING HEIFER	Female bovine greater than 12 months and not more than 23 months of age	HY
HEIFER	Female bovine that has not yet calved and is under 30 months	H
COW	Female bovine which has calved or is over 30 months	C
SPAYED HEIFER	Female bovine not more than 30 months of age, rendered infertile by approved surgical procedures	HSP
SPAYED COW	A female bovine which is over 30 months of age rendered infertile by approved surgical procedures	CSP

Male cattle

TERM	DESCRIPTION	STOCK CODE
BULL CALF	Male bovine, not castrated and not more than 12 months of age	BC
YEARLING BULL	Entire Male bovine, greater than 12 months and not more than 24 months of age.	BY
BULL	Entire Male bovine or castrated male bovine with secondary sexual characteristics aged 24 months and older	B
STEER CALF	Male bovine, castrated, and not more than 12 months of age	SC
YEARLING STEER	Male bovine, castrated, greater than 12 months and not more than 24 months of age	SY
STEER	Male bovine, castrated, aged 24 months and older	S

General

TERM	DESCRIPTION	STOCK CODE
VEAL	A female or male bovine which: 1. has no evidence of eruption of permanent incisor teeth, and; 2. Hot Standard Carcase Weight of no more than 150kg	V
ROSÉ VEAL	Specifically fed veal that have been fed in an Accredited Rosé Veal feeding facility for not less than 150 days	RV
MILK FED VEALER (MSA SPECIFIC)	A female or male bovine, still suckling, which has been sent direct to consignment for processing and presented for Meat Standards Australia (MSA) grading.	MFV

References

2020. AUS-MEAT Handbook of Australian Meat - International Red Meat Manual 8th ed. Brisbane: AUS-MEAT Limited.

4. AGE

Definition

Known date of birth or known date range of birth.

Measurement technique

Chronological age is described by one of the following criteria and expressed as DD/MM/YYYY:

a. Known date of birth – DD/MM/YYYY

b. Known months of age –xx months eg. 10 months of age

c. The first day of the first calving month (to describe maximum age) - 01/MM/YYYY

d. By calving period – MM/YYYY to MM/YYYY

Measurement terms

YEAR	CODE
2020	R
2021	S
2022	T
2023	U
2024	V
2025	W
2026	X
2027	Y
2028	Z
2029	A
2030	B*

Year Code - The Australian coding for year of birth, as an age prefix, may be used to precede number(s) which identify the actual animal.

For example: an ear tag, brand or tattoo such as 'R10' could mean the animal was born in 2020 and was the 10th animal born in that year on a specific property.

** then alphabetically but excluding 'I' and 'O'. The international standard excludes 'U' and 'V'.*

5. BREED DESCRIPTION

Definition

Breed description is provided to describe a group of animals that have a specific characteristic or trait.

Measurement technique

Describing cattle by breed

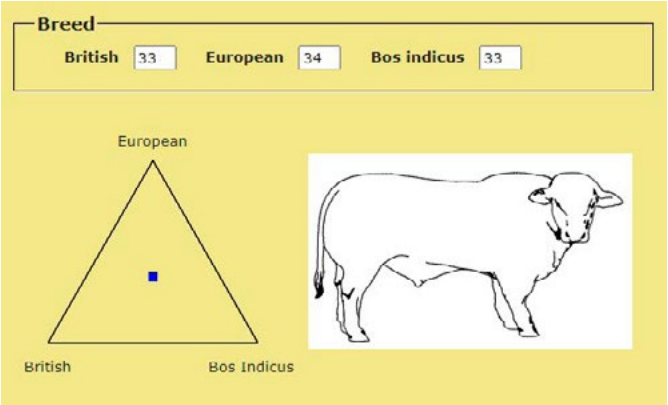
In all cases the bull breed is shown first in the configuration, for example Bull breed x Cow breed.

a. Purebred cattle - Purebred cattle denoted by breed code only or alternatively Bull breed x Cow Breed
   Example: AA or AA x AA
b. Cross bred cattle (comprising two breeds) - Bull breed x Cow Breed
   Example: HH x FF
c. Cross bred cattle (comprising three breeds) - Bull Breed x Cow Breed with the multibreed parent described by bull first then a dot (.) before the dam
   Example: RA x HH.AA or HH.AA x RA
d. Cross bred cattle (comprising four or more breeds) As for b), then by cow breed
   Example: AA. SS X RA. SG

A percentage may be used to describe breed proportions. For example: AA 25% / SS 25%/ RA 25%/ SG 25%

OO is used to represent unknown parentage.

For animals where breed type is unknown or difficult to ascertain, the BeefSpecs™ program can be used to determine an estimated proportion of European, British or Bos indicus in animals. The BeefSpecs tool can be found at: www.beefspecs.agriculture.nsw.gov.au



Use of DNA describe breed

DNA technologies are evolving rapidly and likely to play an increasingly important role in beef cattle breeding and management. Genomics is the term used to describe the analysis of the function and structure of a genome, being the complete set of DNA within a single cell or organism.

Genotyping is the process of taking a hair, blood or tissue sample from an animal and extracting the DNA to analyse the thousands of genetic markers known as Single nucleotide Polymorphisms (SNPs). These SNPs show the differences between animals across the genome. The use of genomics in animal breeding relies on a reference population that has phenotypes and genotypes recorded in which commercial sampled animals can be compared.

There are several applications for DNA tests , including parentage tests that can determine a particular animal's sire or dam, management of genetic conditions, single trait tests that evaluate simple traits like poll/horn status or coat colour and SNP chip tests which can be used for genomic selection to improve complex production traits such as weaning weight and calving ease.

Measurement terms

Breed codes

The breed codes in the table below are the standard codes used in Australia. Note that breeds in other countries may have different codes. Agricultural Business Research Institute (ABRI) maintains a list of breeds and acknowledges not all breeds/composites are covered. New codes are created only as required.

BREED CODE	BREED DESCRIPTION	BREED CODE	BREED DESCRIPTION
AA	ANGUS	DS	DAIRY SHORTHORN
AB	AUBRAC	DX	DEXTER
AF	AFRICANDER	FF	HOLSTEIN-FRIESIAN
AK	AKAUSHI	FS	AUSTRALIAN FRIESIAN SAHIWAL
AL	AUSTRALIAN LOWLINE	GA	GALLOWAY (& BELTED)
AN	ANGLER	GC	GASCONNE
AU	AUSTRALIS (SOUTH DEVON/ANGUS)	GG	GUERNSEY
AY	AYRSHIRE	GM	GREYMAN
BA	BLONDE D'AQUITAINE	GV	GELBVIEH
BB	BRAHMAN	HH	HEREFORD
BC	BALI CATTLE (BUNTANG)	HI	HIGHLAND
BD	BAZADAIS	HU	HUGUENOT
BE	BRALER	HV	HAYES CONVERTER
BF	BRAFORD	IB	ITALIAN/MEDITERRANEAN BUFFALO
BG	BRANGUS	IS	AUSTRALIAN ILLAWARRA SHORTHORN
BH	BRAHMOUSIN	JJ	JERSEY
BJ	BONSMARA	KA	AULIEKOL
BK	BEEFMAKER	KW	KAZAKH WHITE HEAD
BL	BELGIAN BLUE	LB	LEAN BOS (CHIANINA/SAHIWAL)
BM	BEEFMASTER	LH	LONGHORN (TEXAS)
BN	BORAN	LL	LIMOUSIN
BO	BEEFALO	LR	LINCOLN RED
BQ	BOVELDER	LU	LUING
BR	BELMONT RED	MA	MARCHIGIANA
BU	BUFFALO	MD	MANDALONG SPECIAL
BV	BRAUNVIEH	MG	MURRAY GREY
BW	BRITISH WHITE	MH	MASHONA
BY	BLUE GREY	MI	MUESE-RHINE-ISSEL
BZ	BARZONA (COMPOSITE)	MO	MONTBELIARDE
CA	CHIANGUS	MS	MILKING SHORTHORN
CB	CHARBRAY	MU	MAINE-ANJOU
CC	CHAROLAIS (& POLL)	MZ	AUSTRALIAN MILKING ZEBU
CD	A.C.D.C	NG	NGUNI
CF	CHIFORD	NL	NELORE
CI	CHIANINA	NO	NORMANDE
CN	CANADIENNE	OO	UNKNOWN
DD	DEVON	OZ	AUSLINE
DK	DRAKENSBERGER	PH	POLL HEREFORD
DM	DROUGHTMASTER	PM	PIEDMONTESE
DR	DANISH RED		

PR	PIE ROUGE	**ST**	SUPERTALER
PT	PARTHENAIS	**SU**	SUSSEX
PU	PUSTERTALER	**SV**	SHAVER BEEFBLEND COMPOSITE
PZ	PINZGAUER	**SW**	SAHIWAL
QL	QUEENSLANDER	**TA**	TARENTAISE
RA	RED ANGUS	**TC**	THAI NATIVE - CENTRAL (KO LARN)
RB	ROTBUT	**TH**	THAI NATIVE - NORTH EAST (E-SARN RED)
RC	CRC Tropical Red Composite	**TI**	TULI
RF	RED AND WHITE HOLSTEIN FRIESIAN	**TN**	THAI NATIVE - NORTH (KAO LAMPOON)
RO	ROMAGNOLA	**TP**	TROPICANA (Mandalong x Red Brahman) [Bos indicus 59%, Euro 31%, British 9%]
RP	RED POLL	**TS**	THAI NATIVE - SOUTHERN FIGHTING
RS	RED SINDHI	**TX**	TEXON [Texas Longhorn & Devon composite]
RV	RIVER BUFFALO (MURRAH)	**UR**	AUSTRALIAN RED
SA	SHETLAND	**UU**	SOUTH AFRICAN RED
SB	BROWN SWISS	**WA**	WATUZI
SC	SIMINDICUS	**WB**	WELSH BLACK
SD	SOUTH DEVON	**WY**	WAGYU
SE	SENEPOL	**XA**	ALEXANDRIA (NAPCO) COMPOSITE
SG	SANTA GERTRUDIS	**XD**	MANDALAY COMPOSITE
SH	SIMFORD	**XH**	HOTLANDER (SI/BB/SE/RA COMPOSITE)
SI	SIMMENTAL (& FLECKVIEH & BLACK & POLL)	**XK**	KYNUNA (NAPCO) COMPOSITE
SK	SPECKLE PARK (Canada)	**XM**	MOORELLA COMPOSITE
SL	SALERS	**XR**	TOORAK COMPOSITE
SM	SIMBRAH	**XS**	STABILISER (British x Maternal Continental) Leachman
SN	SAHIWAL-SHORTHORN	**XT**	TAURICUS (SD/RA/BJ + others red composite)
SP	SWAMP BUFFALO	**XX**	SUPERBEEFEX (AACO) COMPOSITE
SQ	SQUARE MEATER	**XY**	BARKLY (AACO) COMPOSITE
SR	SWEDISH RED	**ZE**	ZEBU
SS	SHORTHORN (& POLL & BEEF & DURHAM)		

This list is to be reviewed annually. Note – ICAR codes are different.

References

Breedplan.une.edu.au. 2021. *BREEDPLAN - BREEDPLAN* List of Available Breed Codes. [online] Available at: <www.breedplan.une.edu.au/technical/breedplan-list-of-available-breed-codes/>

Beefspecs.agriculture.nsw.gov.au. *BeefSpecs*. [online] Available at: <www://beefspecs.agriculture.nsw.gov.au/>

6. DENTITION

Definition

Dentition is the measure of the eruption of permanent incisor teeth.

Purpose

Dentition is currently used within trading systems, linked to carcase language as a way to classify carcases.

It is not a method to accurately measure chronological age, maturity or eating quality, given eruption of incisor teeth in cattle is not determined by the animal's actual chronological age.

Dentition can be used to assess incisor teeth eruption and the evidence of tooth wear for management purposes, for example the assessment of older cattle and their soundness. At maturity, cattle have a total of 32 teeth, eight of which are permanent incisors on the lower jaw.

Measurement technique

Where dentition is used the classification of animals must be determined as per the AUS-MEAT Language that identifies carcase category descriptions.

The AUS-MEAT categories use the presence or absence of a permanent incisor. Figure 3 illustrates this.

Figure 3. Definition of a permanent incisor

DEFINITION OF A PERMANENT INCISOR

A permanent incisor is defined as:

- A new incisor that has broken (erupted) through the gum surface;
- Permanent incisors are used to determine age in animals;
- Animals with 1-2 permanent incisors are recorded as 2 tooth;
- Animals with 3-4 permanent incisors are recorded as 4 tooth.

Measurement terms

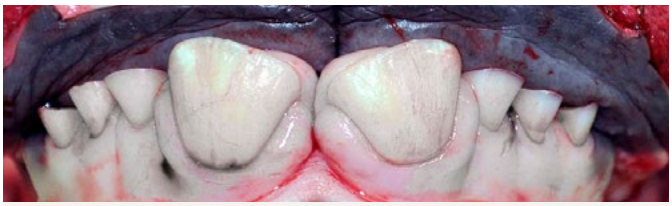
When a market requires a dentition determination/statement as part of the Terms of Trade then the descriptions as per the AUS-MEAT Language apply.

The AUS-MEAT Language definition of the carcase category descriptions by dentition can be found in the *AUS-MEAT Handbook of Australian Meat.*

The method of assessing incisor teeth as per the AUS-MEAT Language may be used to determine the physical state/ soundness of incisor teeth for the purpose of management.

Figure 4. Examples of dentition classifications

ZERO (0) TEETH (MILKTOOTH)



TWO (2) TEETH

FOUR (4) TEETH

SIX (6) TEETH

EIGHT (8) TEETH

BROKEN MOUTH

References

2020. *AUS-MEAT Handbook of Australian Meat - International Red Meat Manual*. 8th ed. Brisbane: AUS-MEAT Limited.

2020. *AUS-MEAT Handbook of Australian Beef Processing. 7th ed. Brisbane: AUS-MEAT Limited, pp.19. www.ausmeat.com.au*

7. WEIGHT

7.1 LIVE ANIMAL WEIGHT

Definition

The weight of an animal before it has been processed and where it stands alive.

Measurement technique

Live weight

Measured on metric scales only and in one kilogram increments for individual animal weights.

Full live weight

The live weight taken after mustering and qualified by stating the time off feed. May or may not have access to water during yarded pre-weighing period.

Empty live weight

Recorded after a pre-determined feed curfew stated in hours, that includes transport journey time and mustering time.

Measurement terms

Time off feed

Commences with the start time for mustering and concludes at a time mid-way through the actual weighing activity.

The *Australian Animal Welfare Standards and Guidelines* should be referred to for the most current requirements for maximum times off feed and water and can be found at www.animalwelfarestandards.net.au/

Time off water

Commences with the start time for mustering and concludes with a time mid-way through the actual weighing activity.

Further information - other weight considerations

Live weight selling

At live weight selling venues the weighing scales are subject to compliance inspections by the Weights and Measures Authorities. Cattle are weighed after a specified curfew.

Consignment weight selling

This is gross laden weight minus unladen weight as measured on a registered weighbridge. This is referred to as net weight.

The consignor (usually the producer) should discuss the vehicle weighing practices with the transporter and also with the consignee (the buyer). The consignor should check that for B-Double trailers, both the prime mover and the trailer can be weighed as one unit.

Loaded vehicle weights

Where a loaded truck weight is measured for trade purposes, the laden and unloaded weighing must occur at a registered weighbridge in that jurisdiction. Where possible this should be at the unloading premise and before washing of the vehicle to avoid weight distortion due to change in fuel and effluent volume that can impact the net consignment weight.

Transport considerations

For transporting cattle and the time off feed and water refer to the *The Australian Animal Welfare Standards and Guidelines for - Land Transport of Livestock.*
- www.animalwelfarestandards.net.au/land-transport/

All trucks in Australia which transport cattle are classified as Heavy Vehicles and must comply with the National Heavy Vehicle Regulations. The description of the various configurations of these can be found at the Australian Trucking Association website. www.truck.net.au.

The Australian Livestock and Rural Transporters Association supports the *Cattle Loading Density Guidelines from the Land Transport Standards and Guidelines.*

References

2012, Australian Animal Welfare Standards and Guidelines — Land Transport of Livestock. 1st ed. Canberra, Animal Health Australia (AHA)

2016. Description of truck configurations - Technical Advisory Procedure. 1st ed. ACT: Australian Trucking Association Ltd.

2019. *Is the animal fit to load?.* 2nd ed. Sydney, NSW: Meat & Livestock Australia.

7.2 CARCASE WEIGHT

Definition

Hot Standard Carcase Weight (HSCW) is recorded as a weight for each side of the halved carcase (measured in kilograms to an accuracy of one decimal point), after the AUS-MEAT Standard Carcase Trim has been completed and prior to the washing and chilling of the carcase by AUS-MEAT accredited processors. Carcases trimmed using Standard and non-standard processes are identified within the processor feedback systems.

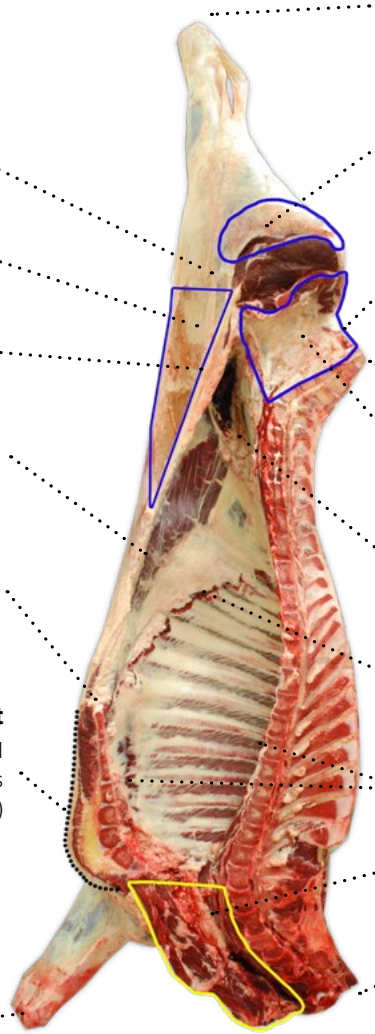
Measurement technique

Hot Standard Carcase Weight (HSCW) is measured using scales in a processing establishment. Carcase weight can be estimated by multiplying live weight by dressing percentage.

The diagram below details the carcase trim to comply with the AUS-MEAT Standard Carcase Trim that must be adhered to when the cattle have been traded Over the Hooks (OTH).

Figure 5. AUS-MEAT Standard Carcase Trim

Trimming is limited to:



Feet
Between the tarsus and metatarsus

Excess fat topside rim
Trimmed to 10mm following the contour of the underlying muscle

Channel rim
From the ischiatic tuber to the sacro-coccygeal junction so to just expose the sacro-sciatic ligament

Tail
Removed at the sacro-coccygeal junction

Fat within the pelvic channel

Kidneys and kidney fat removed

Thick and thin skirt removed

Intra-thoracic fat removed

Neck region - Hygiene trim

Head
Removed between the skull (occipital bone) and the 1st cervical vertebrae

Testes, penis and udder

Pre-crural (flank) fat on the medial surface of the cutaneous trunci

External fat on the ventral abdomen

Linea alba
Removed so as to not expose the meat surface

Xiphoid cartilage

Brisket
External fat on the brisket point end to be 10mm (where excess fat is applicable)

Feet
Between the carpus and metacarpus

Further information

AUS-MEAT Standard Carcase Trim applies to all over the hooks traded cattle in AUS-MEAT Accredited processing facilities, unless a variation is agreed to by the producer and processor involved. In this case, the trim can not go beyond the Standard Carcase definition.

Known purchase methods include:

- Company owned Cattle
- Saleyard Cattle
- Paddock Sales (per head basis)
- Liveweight.

References

2021, AUS-MEAT Australian Meat Industry Classification System - For The Red Meat Industry, Brisbane: AUS-MEAT Limited

7.3 DRESSING PERCENTAGE

Definition

Dressing percentage simply states the relationship between the carcase weight and the estimated or known live weight. Dressing percentage is not a measure of carcase merit or carcase yield.

Measurement technique

The calculation for Dressing Percentage is: (hot standard carcase weight ÷ live weight) × 100.

The live weight may be a 'full' live weight or an 'empty' live weight.

Guide to dressing percentages

Estimated dressing percentages based on HSCW, approximately two hours off pasture.

		DRESSING PERCENTAGE % VALUES						
FAT SCORE	FAT DEPTH (MM) P8 RUMP SITE	YEARLINGS	YOUNG CATTLE/ STEERS & HEIFERS	HEAVY STEERS	COWS <200 KG	COWS 200-250 KG	COWS > 250 KG	BULL (HSCW)
1	0-2	49-50	50-53	48-52	38-40	41-44	42-45	(<200 kg) 48-54
2	3-6	50-53	51-54	50-53	39-41	42-45	43-46	(200-300 kg) 53-57
3	7-9 10-12	51-55 52-56	52-55 52-56	51-54 52-55	40-42 41-44	45-50 46-53	44-48 48-50	(>300 kg) 54-58
4	13-15 16-21	53-57	54-57 55-58	53-56 54-57	43-48 46-49	47-52 49-51	49-51 50-55	
5 & 6	20+		56-59	55-58	47-50	50-56	51-56	

This table is provided for guidance only.
For further information on Dressing Percentage including adjustments for time off feed and water, refer to the Supplement

References

McKiernan, B., Gaden, B. and Sundstrom, B., 2007. Dressing percentages for cattle. NSW Department of Primary Industries Primefacts, [online] Primefact 340. Available at: <www.dpi.nsw.gov.au/__data/assets/pdf_file/0006/103992/dressing-percentages-for-cattle.pdf>

8. FAT SCORE

Definition

Fat score is an independent assessment of subcutaneous fat without any assessment for muscle. Fat score in conjunction with muscle score provides an accurate overall description of the live animal.

Purpose

The use of fat score directly aligns:

a. to the carcase assessment methods and commercial specifications, including processor, feeder and live export requirements.

b. to breeder management for reproduction targets.

Fat score is used when describing cattle destined for slaughter, the re-stocker and live export markets.

Measurement technique

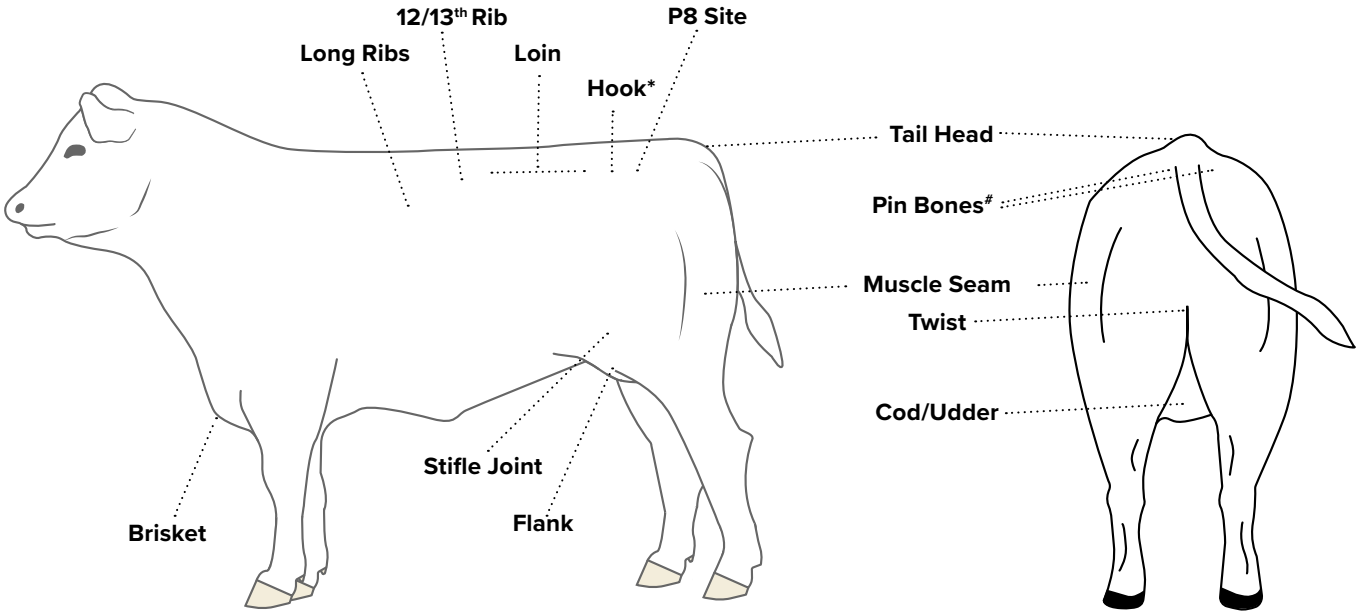
Fat score is scored using a definitive 6-point classification system, with a welfare score (0) to describe nutritionally-deprived or diseased cattle.

The classification is set out in the table provided.

Sites to assess fat score

The classification is based on assessing the physical appearance of the animal at the following anatomical sites:

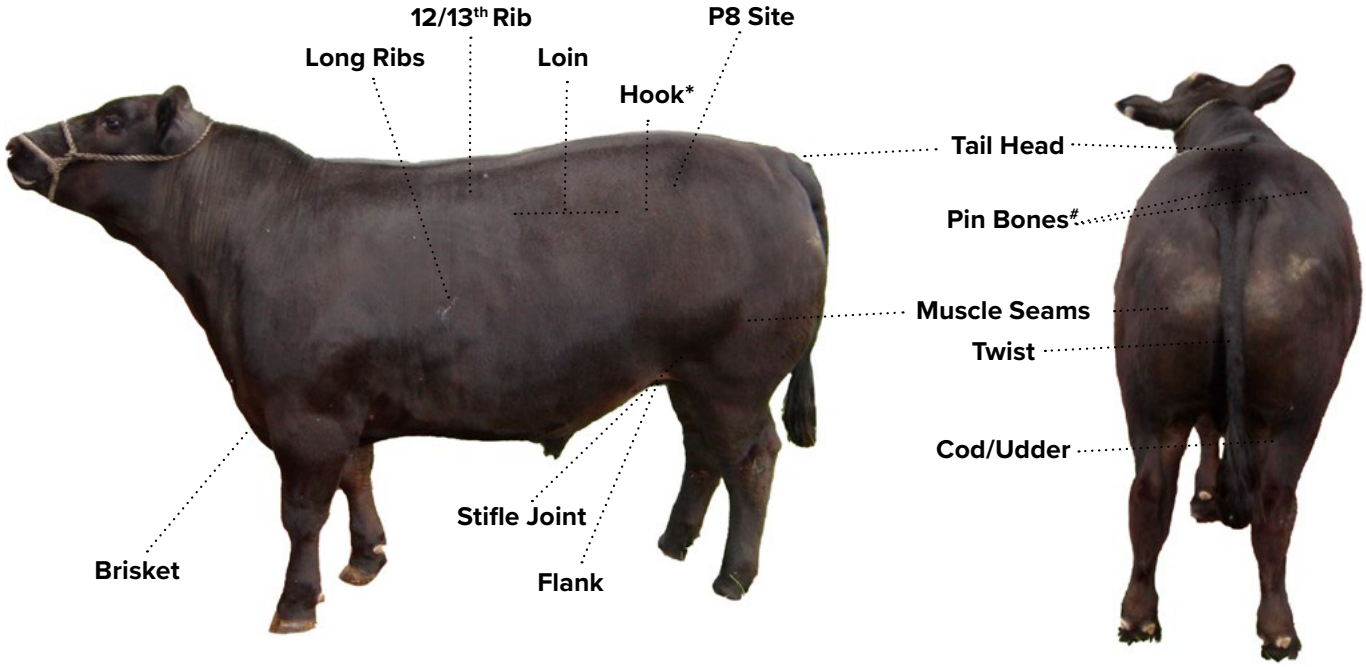
Figure 6. Sites to assess fat score



* Cranial end pelvic bone. Hook may also be referred to as hip bone

Caudal end pelvic bone

Figure 7. Sites used to estimate fatness visually or manually



Note – the animal in Figure 7 had 7mm ribfat and 9mm P8 fat, and was assessed as having a fat score of 3.

* Cranial end pelvic bone. Hook may also be referred to as hip bone

Caudal end pelvic bone

Ultrasound sites

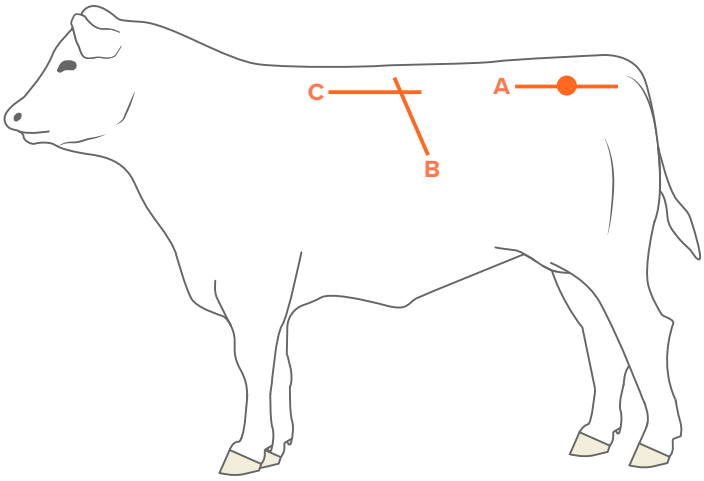
Physical sites for ultrasound evaluation of carcase characteristics.

A – Rump fat (P8) image at site described by AUS-MEAT

B – Cross-sectional image for ribeye area/depth and 12th-13th rib fat thickness

C – Longitudinal image for intramuscular fat, usually taken between 12th and 13th rib

Figure 8. Sites for objective measurement



Rib fat measurement site

These are located between either of the following sites:

- 10th and 11th long rib
- 11th and 12th long rib.
- 12th and 13th long rib and shown in the diagram as 'B'

Further Information

Fat score diagrams by genotypes are provided in the Supplement.

References

Andrews, T., 2019. Live cattle assessment. NSW Department of Primary Industries Primefacts, [online] Primefact 622. Available at: <www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/appraisal/publications/live-cattle-assessment>

2021. Cattle Assessment Manual. Sydney: Meat & Livestock Australia.

Measurement terms

FAT SCORES	12-13TH RIB	P8 FAT DEPTH	VISUAL ASSESSMENT	MANUAL ASSESSMENT
0	0	0	Welfare score Refer to Section 14 - Animal Welfare for further detail	Welfare score
1	1 to 2mm	1 to 2mm	• There is no fat around the tailhead • Hook, tailhead and ribs are prominent • No filling in the brisket • Cut up in the twist and flank • Individual muscle seams easily seen and distinguished	• Ribs are sharp • There is no fat felt between the hide and bone at point of the hook and along the spinous processes of the back line
2	2 to 3mm	3 to 6 mm	• Hooks, pin bones and ribs still obvious • No fat beside tailhead • Ribs are no longer visually obvious • Flank is still cut up • Little filling is evident in brisket and twist • Muscle seam in hindquarter is still evident • Other muscle seams are no longer as visible	• Hook bone and ribs are hard with no softness • Long ribs are easily distinguished when felt • Spinous processes feel rounded rather than sharp
3	4 to 7mm	7 to 12mm	• Filling is now evident around the tail head, twist and brisket • The flank is starting to let down • Hooks and pin bones are now having a moderately rounded appearance • The muscle seam in the hindquarter is no longer visible	• The ribs are easily felt under firm pressure to distinguish between them • Fat that is easily felt covers either side of the tailhead and there is a softness over the pin, hook and backline
4	8 to 12mm	13 to 22mm	• There is filling around the tailhead and small mounds of fat are starting to become present • There is fat cover now evident over the hook and is taking on a rounded appearance • There is filling in the brisket and twist and taking a rounded appearance. • The flank is now let down/filled with fat and is in line with stifle joint • Muscle seam on hindquarter is raised by fat and is now visible	• There is some fat cover around the hook bone • Small mounds of fat which are soft to touch are present around the tailhead • Ribs are hard to feel/distinguish • There is now fat that is easily depressed over the hook and backline. This can be depressed by approximately 10mm
5	13 to 18mm	23 – 32mm	• Heavy fat covering, fat is starting to mound over pin bones and hooks • The brisket is taking on very rounded appearance • The tailhead is now enveloped in fat • Ribs appear wavy/ropey due to fat folds • The animal is now squaring off in the flank and twist area	• Ribs cannot be felt • Pin bones, backline and hook bones are not easily felt and when depressed will give up to 20mm
6	Over 18mm	Over 32mm	• The animal now takes on a block/square appearance • Tailhead and hooks are completely buried by large rounds of fat • Ribs are wavy/ropey due to fat folds • The brisket and udder are heavy and let down	

9. MUSCLE SCORE

Definition

Muscle score is an independent assessment of muscularity without any assessment for fat. Muscle score, in conjunction with Fat score, provides an accurate overall description of the live animal.

Purpose

Muscle score specifically describes the levels of muscularity and can be used to replace butt shape.

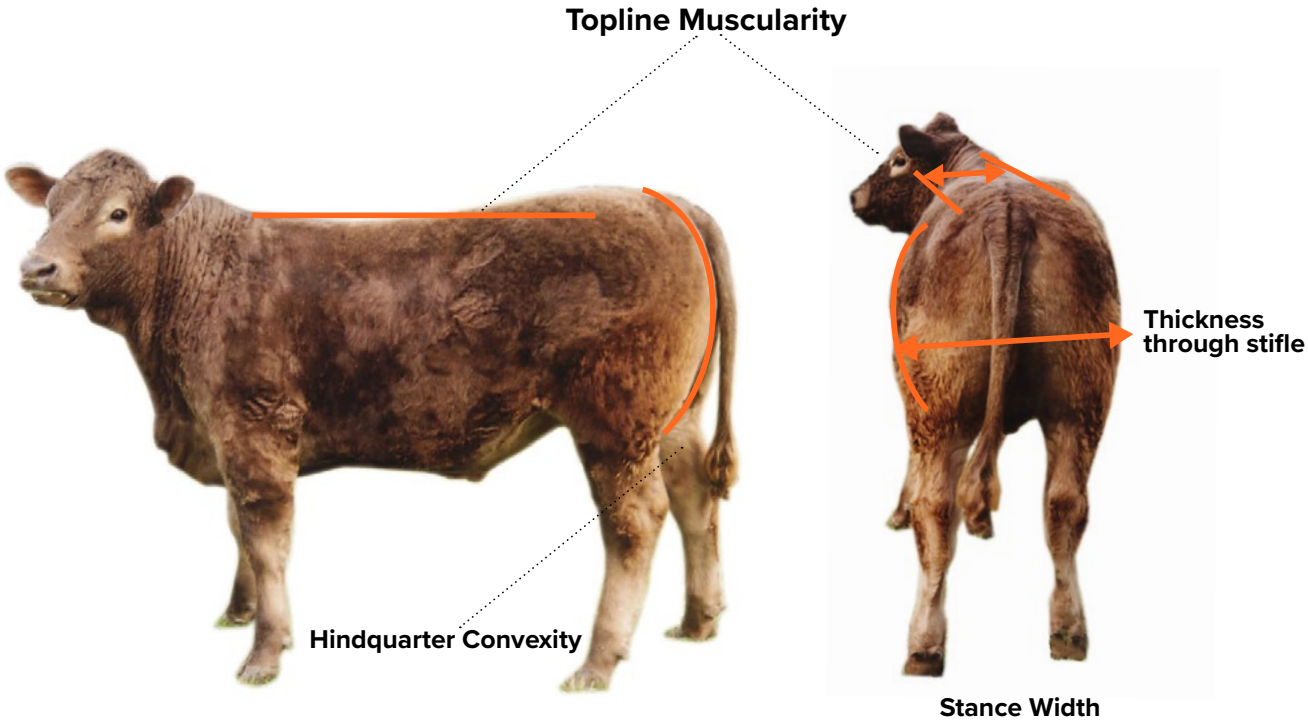
- Muscle score is correlated to lean meat yield.
- Muscle score is a point in time assessment that classifies animals into five different classes by a declining score of A to E.
- Muscle score is most accurately assessed after the Fat score has been determined.
- Muscle score is used when describing:
  - cattle destined for slaughter, re-stocker, and live export markets
  - breeding bulls.
- Muscle can be an important energy reserve in poor seasonal conditions.

Measurement technique

Muscle score assesses the muscularity at defined points of the animal's body.

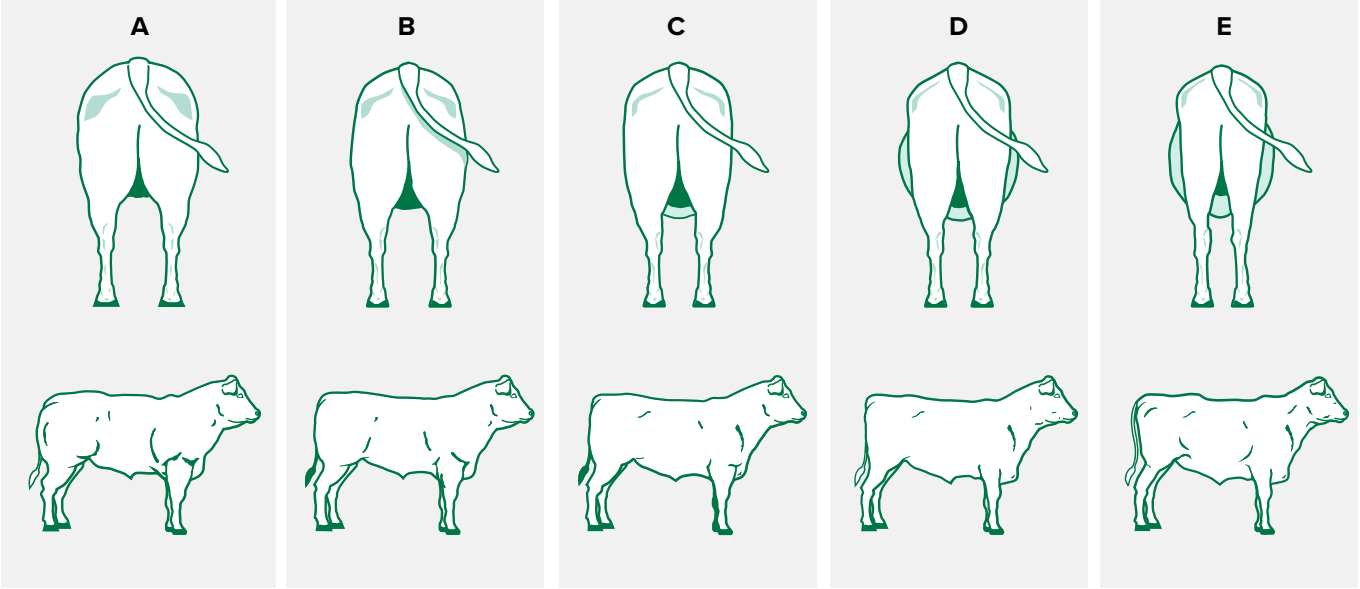
The assessment sites for muscle scores are side and rear views of the animal at the following sites shown in Figure 9.

Figure 9 - Sites used to estimate muscularity



Measurement terms

Figure 10 - Muscle scores



When reported together, the scores for muscle and fat are reported in the following format:

Muscle score then Fat score

For example: C3 means Muscle score C and Fat score 3.

It is not mandatory to report both together, but it is important and more valuable when done. The *National Livestock Reporting Service (NLRS)* report muscle and fat scores in this format.

References

Andrews, T., 2019. Live cattle assessment. NSW Department of Primary Industries Primefacts, [online] Primefact 622. Available at: www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/appraisal/publications/live-cattle-assessment>

2021. Cattle Assessment Manual. Sydney: Meat & Livestock Australia.

10. PHYSICAL DESCRIPTIONS

10.1 FRAME SIZE

Definition

A numerical score based on age and height where age is known in months and height is measured above the hook joints.

Measurement technique

The height used to determine frame size is measured at the back – bone [in centimetres only and adjusted to the closest centimetre meaning 0 to 4 mm (down) and 5 to 9 mm (up)] above the line of the two hook joints.

Height (C) = Crush height (A) - difference (B) between top of crush and animal. The measure of B is taken from the top of the crush down to the backbone at C

Figure 11. Measurement sites height

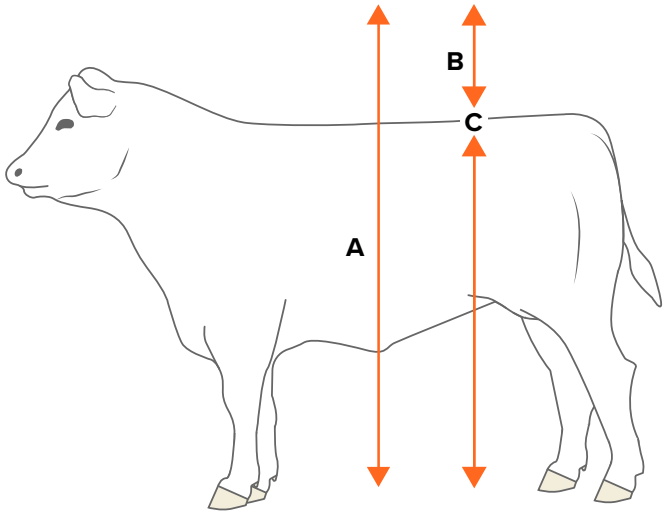
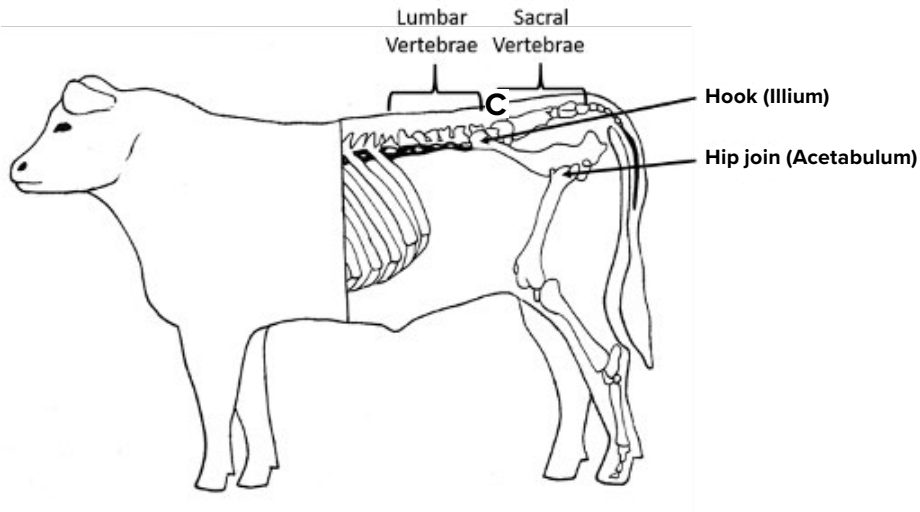


Figure 12. Reference points for hook site



Measurement terms

Frame size tables

The frame size is found by locating the age in months shown in the far left column and locating the measured height along the horizontal row and reading the score at the top of the column.

The frame score tables provided are for Australia.

Note - Animals that have suffered from significant nutritional stress will have their frame size compromised.

Female frame scores based on height (cm)

AGE MONTHS	FEMALES—HEIGHT (CM) FRAME SCORE										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
5	84	89	94	99	105	110	115	120	126	131	136
6	87	92	97	102	107	113	118	123	128	134	139
7	89	94	100	105	110	115	121	126	131	136	141
8	92	97	102	107	112	117	122	128	133	138	144
9	94	99	104	109	114	119	124	130	135	140	145
10	96	101	106	111	116	121	126	131	136	141	147
11	98	103	108	113	118	123	128	133	138	144	149
12	99	104	109	114	119	124	130	135	140	145	150
13	10	105	110	116	121	126	131	136	141	146	151
14	102	107	112	117	122	127	132	137	142	147	152
15	103	108	113	118	123	128	133	138	143	148	153
16	104	109	114	119	124	129	134	139	144	149	154
17	105	110	115	120	125	130	135	140	145	149	154
18	106	110	116	121	126	131	135	140	145	150	155
19	107	111	116	121	126	131	136	141	146	151	156
20	107	112	117	122	127	132	137	141	146	151	156
21	108	113	118	123	128	132	137	142	147	152	157

Mature cows

24	109	114	119	124	129	133	138	143	148	153	157
30	111	116	121	125	130	135	140	145	150	154	159
36	112	117	122	126	132	136	141	145	150	155	160
48	113	118	122	127	132	137	142	146	151	155	160

Source: NSW Department of Primary Industries

Steer frame scores based on height (cm)

AGE MONTHS	STEERS—HEIGHT (CM) FRAME SCORE										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
5	85	90	95	100	105	110	116	121	126	131	137
6	88	93	99	104	108	114	119	124	130	135	140
7	92	97	102	107	112	117	122	128	133	138	143
8	95	100	105	110	114	120	125	131	136	141	146
9	98	102	107	113	117	123	128	133	138	144	149
10	100	105	110	115	119	125	130	135	140	146	151
11	102	107	112	117	122	128	133	138	143	148	153
12	104	109	114	119	124	130	135	140	145	150	155
13	106	111	116	121	126	131	137	142	147	152	157
14	108	113	118	123	127	133	138	143	148	154	159
15	109	114	119	124	129	135	140	145	149	155	160
16	110	116	121	126	130	136	141	146	151	156	161
17	112	117	122	127	131	137	142	147	152	157	162
18	113	118	123	128	132	138	143	148	153	158	163
19	114	119	124	129	133	139	144	149	154	160	165
20	115	120	125	130	134	140	145	150	155	160	165
21	116	121	126	131	135	140	146	151	156	161	166
24	118	123	128	133	137	142	147	152	157	163	168
30	120	125	130	135	139	145	150	155	160	165	170

Source: Animal Genetics and Breeding Unit (AGBU), Armidale.

Bull Frame Scores based on height (cm)

AGE MONTHS	BULL — HEIGHT (CM) FRAME SCORE										
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
5	85	90	95	100	105	110	116	121	126	131	137
6	88	93	99	104	108	114	119	124	130	135	140
7	92	97	102	107	112	117	122	128	133	138	143
8	95	100	105	110	114	120	125	131	136	141	146
9	98	102	107	113	117	123	128	133	138	144	149
10	100	105	110	115	119	125	130	135	140	146	151
11	102	107	112	117	122	128	133	138	143	148	153
12	104	109	114	119	124	130	135	140	145	150	155
13	106	111	116	121	126	131	137	142	147	152	157
14	108	113	118	123	127	133	138	143	148	154	159
15	109	114	119	124	129	135	140	145	149	155	160
16	110	116	121	126	130	136	141	146	151	156	161
17	112	117	122	127	131	137	142	147	152	157	162
18	113	118	123	128	132	138	143	148	153	158	163
19	114	119	124	129	133	139	144	149	154	160	165
20	115	120	125	130	134	140	145	150	155	160	165
21	116	121	126	131	135	140	146	151	156	161	166

Mature bulls

24	118	123	128	133	137	142	147	152	157	163	168
30	120	125	130	135	139	145	150	155	160	165	170
36	122	127	132	137	141	146	151	156	161	166	171
48	123	128	133	137	142	147	152	157	162	167	172

Source: NSW Department of Primary Industries

Where assessments are being made at ages that are between information provided in the tables, the average of the difference in measurements should be used. After 21 months, animals may still grow and develop but it will occur sufficiently slowly that accuracy is not impacted much by age.

REFERENCES

Andrews, T., 2019. Live cattle assessment. NSW Department of Primary Industries Primefacts, [online] Primefact 622. Available at: www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/appraisal/publications/live-cattle-assessment

Dpi.nsw.gov.au. n.d. Frame scoring of beef cattle. [online] Available at: <www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/appraisal/publications/frame-scoring>

10.2 MATURITY

Definition

Maturity type or growth potential is a way of describing the skeletal size of cattle. Frame score, which is the height of a beef animal at a given age can be used as a measure of its maturity type. Given adequate nutrition and health, most animals should maintain the same frame score and hence maturity type throughout their life, while actual height increases with age.

Purpose

Maturity type can be used as an aid to predict the growth and fattening pattern of an animal and its potential mature size.

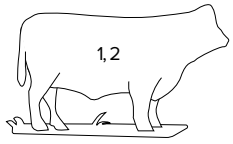
Measurement technique

Measurement technique is the same as frame size. This is assessed when a breeding or management decision is being made.

Measurement terms

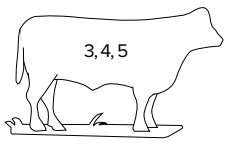
Maturity Type	Frame Score
Early	**1 and 2**

- Generally short in every skeletal dimension
- Generally, reach market potential at low carcase weights, i.e. 150–180kg carcase weight at 9–12mm of fat at the P8 site
- Tendency to have excess fat coverage and therefore low yielding at heavier carcase weights
- Lack rapid growth potential
- Will generally reach mature cow weights less than 450kg at fat score 3 (7-12mm)



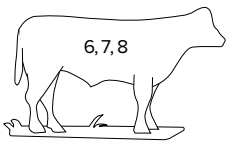
Moderate	**3,4 and 5**

- Average growth potential rising to good growth for frame 5s
- Generally, reach market potential at carcase weights of 200-350kg with 9–12mm of fat at the P8 site.
- Suitable for a range of different market
- Will generally reach mature cow weights 450-600kg at fat score 3 (7-12mm)



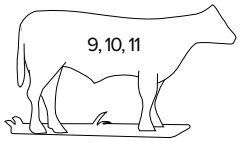
Late	**6,7 and 8**

- Much larger cattle with high growth potential
- Reach market potential at heavier carcase weights of 350– 450kg with 9–12mm of fat at the P8 site.
- Will generally reach mature cow weight greater than 600kg in fat score 3 (7-12mm)



Very Late	**9,10 and 11**

- Huge cattle with extreme growth potential, and usually extremely lean



REFERENCES

Andrews, T., 2019. Live cattle assessment. NSW Department of Primary Industries Primefacts, [online] Primefact 622. Available at: www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/appraisal/publications/live-cattle-assessment

Dpi.nsw.gov.au. n.d. Frame scoring of beef cattle. [online] Available at: <www.dpi.nsw.gov.au/animals-and-livestock/beef-cattle/appraisal/publications/frame-scoring>

10.3 HORNS

Definition

Cattle horns arise from subcutaneous connective tissue (under the scalp) and later fuse to the underlying frontal bone.

Purpose

The purpose of assessing horns can be for input in breeding programs. Cattle for live export must meet the *Australian Standards for the Export of Livestock* for horn length.

Measurement technique

Visual assessment. Genetic evaluations can also be used to determine heterozygous and homozygous animals.

Measurement terms

HORN STATUS	CODE
HOMOZYGOUS POLLED	PP
HETEROZYGOUS POLLED	PH
HORNED	HH

The following codes are used in the beef industry to indicate the genetic status of horned or polled.

OBSERVED STATUS	DESCRIPTION
HORNED	No portion of the horn has been removed
TIPPED	The tip of the horn has been removed
INCOMPLETE DEHORNED	There is some horn growth following dehorning
SCURS	Incompletely developed horn-like structures generally only attached to the skin
DEHORNED	Where the horn has been removed leaving no protrusion from the skull
POLLED	There is no evidence of horn growth as a genetic attribute
DISBUDDED	The immature horn bud and the surrounding area of skin is removed (from a young calf) prior to solid attachment to the skull

10.4 EYES

Definition

The purpose of assessing eye structure and pigmentation is to assess for eye disease and injury risk.

Measurement technique

There is no numerical scoring method for eye pigment or bone structure of the eye socket.

Measurement terms

- Hooded eye – meaning the bone structure of the eye socket protrudes beyond the eyeball.
- Pop-eyed – meaning the eyeball protrudes from the eye socket and the eye lid does not close over the eyeball.
- Pigment – meaning pigmentation of the eyelids (may be part or full). Brown hair around the eye socket is not pigmentation

10.5 TEMPERAMENT

Definition

The term 'Temperament' is used to describe the behaviour of all cattle in response to an environment, stimuli or situation. The temperament of an individual animal is a result of both its inherent temperament and its environment, including handling and training.

Measurement technique

Animals can be scored for temperament using either a yard or crush test, or by flight time. Testing should be conducted once animals have rested after mustering. The recommended time of scoring is at weaning or shortly afterwards. The advantage of scoring at weaning is that all calves should have had similar treatment so variation in handling prior to scoring should be minimised.

Yard test

The calves are individually put into a small square yard and the handler should attempt to hold the animal in one corner for about 30 seconds, whilst using low stress handling techniques.

Crush test

The calves are put up a race and individually held in the crush (but not restrained in the bail-head) for about 30 seconds.

Flight time

Flight time measurements are recorded on animals using specialised flight time equipment. Animals are held individually in the crush for a short period and then the head bail opened. Two light beams are then used to objectively measure the time taken for the animal to travel approximately two metres at the exit of the crush, between the light beams.

Measurement terms

The proposed scoring methods will apply to both beef and dairy cattle. When using either the crush or yard test, the behaviour of animals should be observed and animals scored using the following criteria.

RISK SCORE	HANDLING RISK	CODE	DESCRIPTION
1	LOW	DOCILE	Mild disposition, gentle and easily handled, stands and moves slowly during handling, undisturbed, settled, somewhat dull, exits crush calmly.
2	MEDIUM	RESTLESS	Quiet but slightly restless, may be stubborn during handling, may try to back out of crush, some flicking of tail, exits crush promptly.
3	MEDIUM	NERVOUS	Manageable but nervous and impatient, a moderate amount of struggling, movement and tail flicking, exits crush briskly.
4	HIGH	FLIGHTY	Jumpy and out of control, quivers and struggles violently, may bellow and froth at mouth, continuous tail flicking, defecates and urinates during handling, frantically runs fence-line and may jump when penned individually, exhibits long flight distance and exits crush wildly.
5	HIGH	AGGRESSIVE	May be similar to score 4 but with added aggressive behaviour, fearful, extreme agitation, continuous movement which may include jumping and bellowing while in crush, exits crush frantically and may exhibit attack behaviour when handled alone.

REFERENCES

Breedplan.une.edu.au. n.d. Recording docility scores. [online] Available at: <www.breedplan.une.edu.au/media/3nbdpuwa/recording-docility-scores.pdf>

10.6 STRUCTURAL ASSESSMENT

Definition

This section provides a Cattle Structural Assessment System for national use and is intended to be the method for consistent and uniform assessment/scoring structural traits in commercial herd management and selection for breeding or sale.

Purpose

Structural scoring has the following purposes:

1. It can be used to describe sale animals and the scores may be included in sale catalogues.
2. Breeders can score their own cattle, or use an independent scorer to score animals, for selection for their herd. Scores allow breeders to cull animals with scores outside acceptable ranges so improving the overall structure of their herd. It can also be useful as a method of documenting change over time in the herd.
3. This assessment system is used in genetic evaluation where a trait requires live assessment and scoring. Assessors are trained to use the system.
4. Structural assessment is important when assessing cattle for long feeding regimes to ensure soundness throughout this time.

It is recognised that Breed Societies (both beef and dairy) will have their own additional traits to be measured for genetic evaluation purposes. Both the beef and dairy breed societies require trained Assessors to assess and score animals for genetic evaluation and for the live export of breeding cattle, Australian Cattle Genetic Export Agency (ACGEA) which is managed by ABRI.

Measurement technique

The National Cattle Structural Assessment System uses:

1-9 SCORING SYSTEM	1-5 SCORING SYSTEM	1-3 SCORING SYSTEM
Feet and leg structure • Feet claw shape • Feet angle • Rear legs – side and hind view Udder • Evenness • Teat size Sheath	Udder • Udder attachment • Teat structure and placement	• Front leg • Shoulder

For 1- 9 scoring systems:

- A score of 5 is ideal.
- Scores of 4 or 6 show slight variation from ideal, but this includes most animals. Any animal scoring 4 and 6 would be acceptable in any breeding program.
- Scores of 3 or 7 shows greater variation, but would be acceptable in most commercial breeding programs.
- Score of 2 or 8 reflect low scoring animals that should be looked at carefully before retaining as breeders or for sale as feeder cattle.
- Cattle scoring 1 or 9 are considered culls for breeding and for feeder cattle.

Assessment procedures

Facilities must include a firm, dry surface, preferably a concrete area where foot shape can be easily seen. The area should be large enough for the animal to walk and turn around, and for front, rear and side views to be seen. Scoring in muddy or manure filled yards will not allow accurate views of feet.

Age at assessment/scoring

The older the animals, the more they have the opportunity to display differences in structural traits. Many young cattle do not display structural faults that will become more recognisable as they get older and heavier. Females do not display udder character until they start lactating.

The following age or development guidelines are given:

Bulls

- Herd bulls annually, from two years of age.

Females

- Heifers at a minimum age of 12 months for traits other than udder scores.
- Cows rearing first calf when Udder Scores are done in the first 6 months of lactation.
- For herd records or genetic evaluation, it is recommended that females be scored more than once –eg at 2½, 3½ and 4½ years.
- All breeding cows at calf weaning.

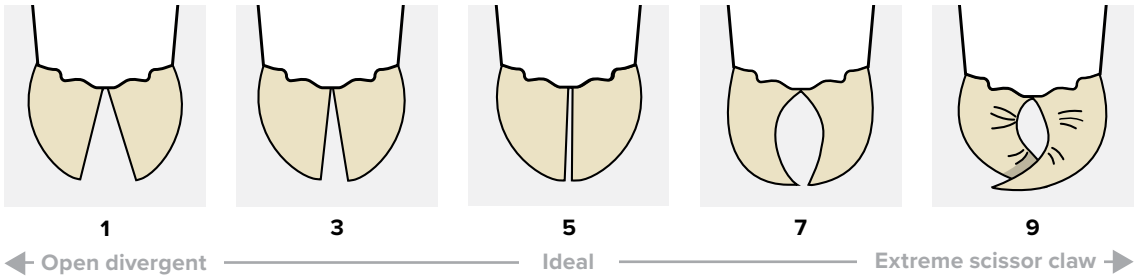
Steers

- At any age after 6-7 months and prior to selling as feeder steers.

Measurement terms

Feet claw shape

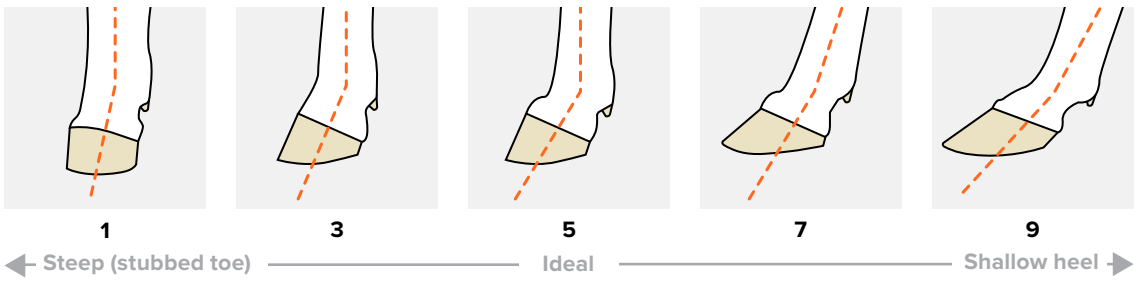
Scoring range 1-9



Feet angle/claw length

Scoring range 1-9

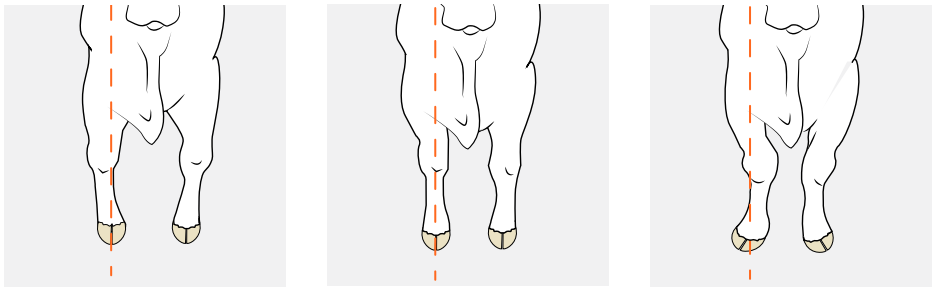
Use the angle of pastern, depth of heel and length of foot (front or rear) to determine score



Front leg and shoulders

Front leg

Scoring range 1-3



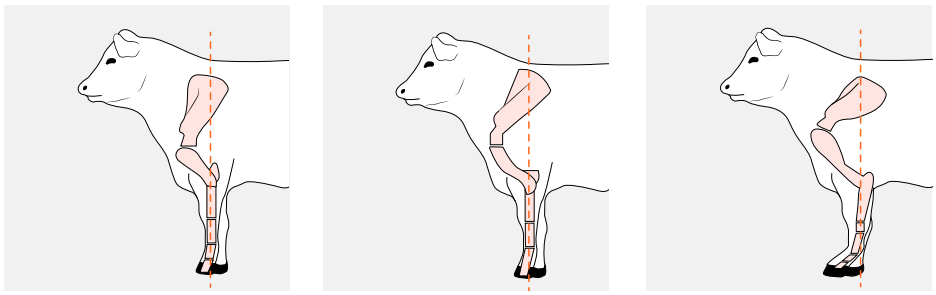
1 — Bow-legged

2 — Correct

3 — Knock knee

Shoulder angle

Scoring range 1-3



1 — Too straight Straight leg. Short toe/deep heel, head down

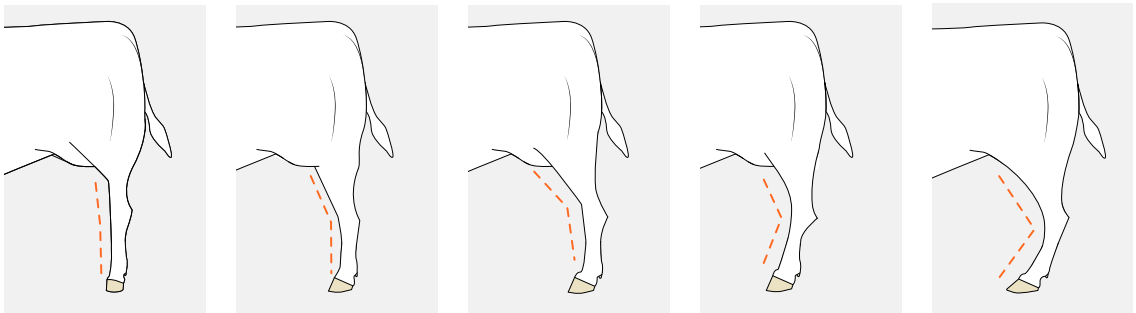
2 — Correct

3 — Too angled Long toe, shallow heel

Rear legs

Side view

Scoring range 1-9



1 — Straight (post legged)

3

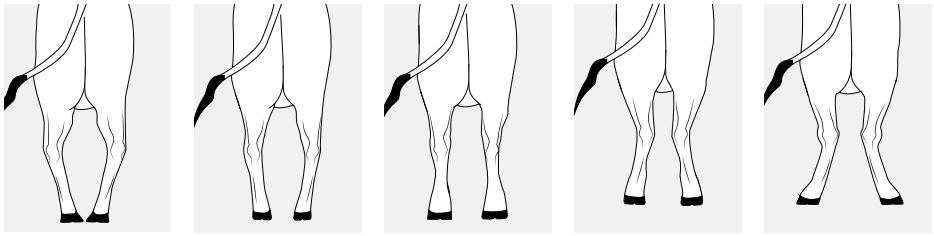
5 — Ideal

7

9 — Sickle hocked

Hind view

Scoring range 1-9



1 — Bow legged

3

5 — Ideal (parallel)

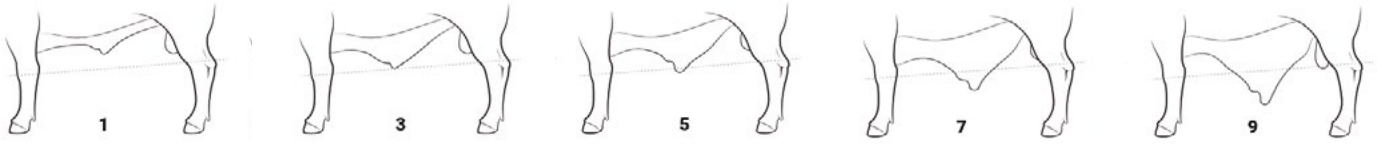
7

9 — Cow hocked

Use the direction of the feet when viewed from rear to determine score

Sheath

Scoring range 1-9



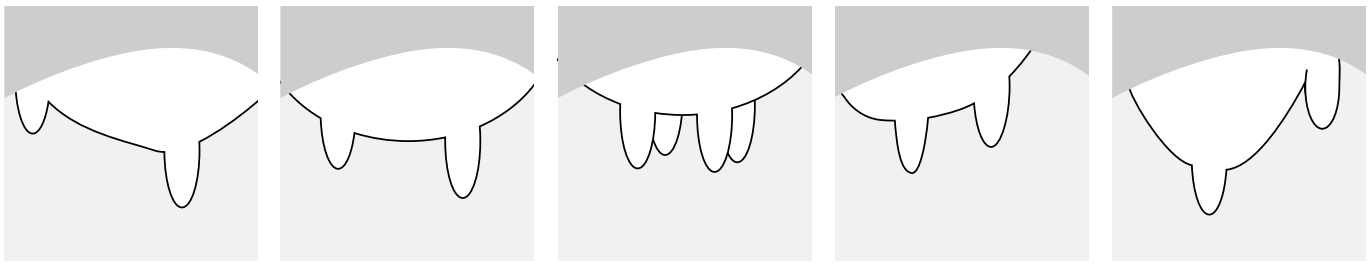
Tight to body — Pendulous

Source: Australian Cattle Veterinarians, a Special Interest Group of the Australian Veterinary Association Ltd.

Udder

Udder evenness

Scoring range 1-9



1 3 5 7 9

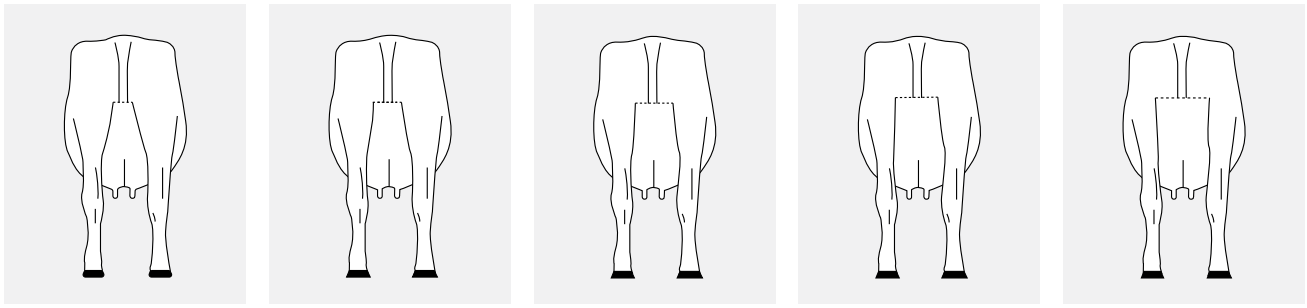
Dropped hind quarter — Ideal – good balance — Dropped fore quarter

SOURCE: DataGene

Udder attachment

Rear attachment width (width at milk secreting tissue)

Scoring range 1-9



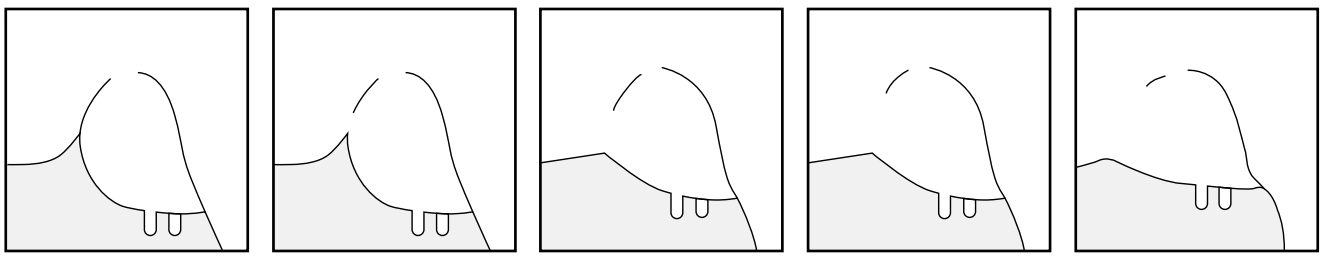
1 3 5 7 9

Narrow — Intermediate — Wide

SOURCE: DataGene

Fore udder attachment

Scoring range 1 - 9



1 3 5 7 9

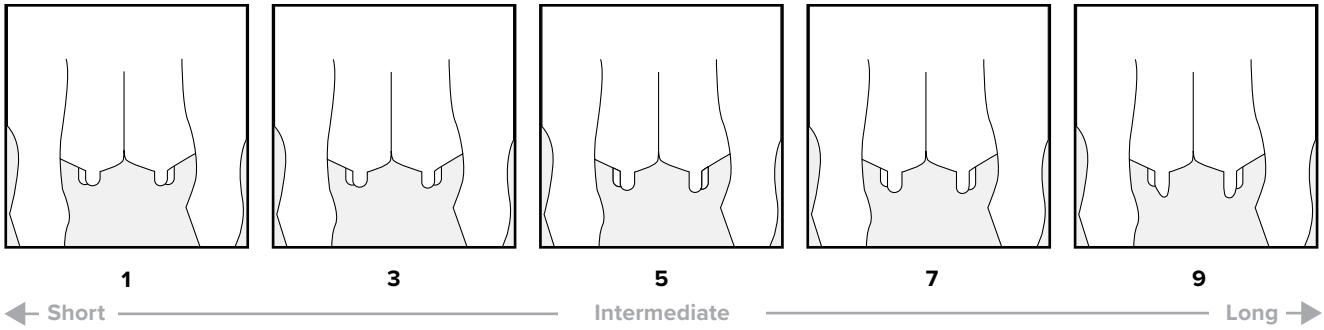
Weak attachment — Intermediate — Strong high attachment

SOURCE: DataGene

Teat structure

Length

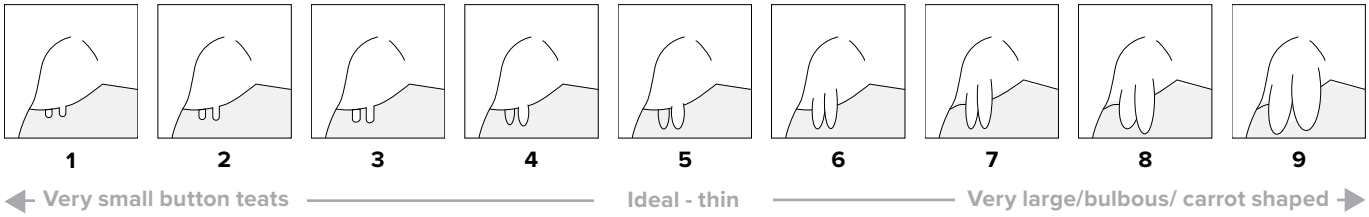
Scoring range 1 - 9



SOURCE: DataGene

Size and shape

Scoring range 1 - 9

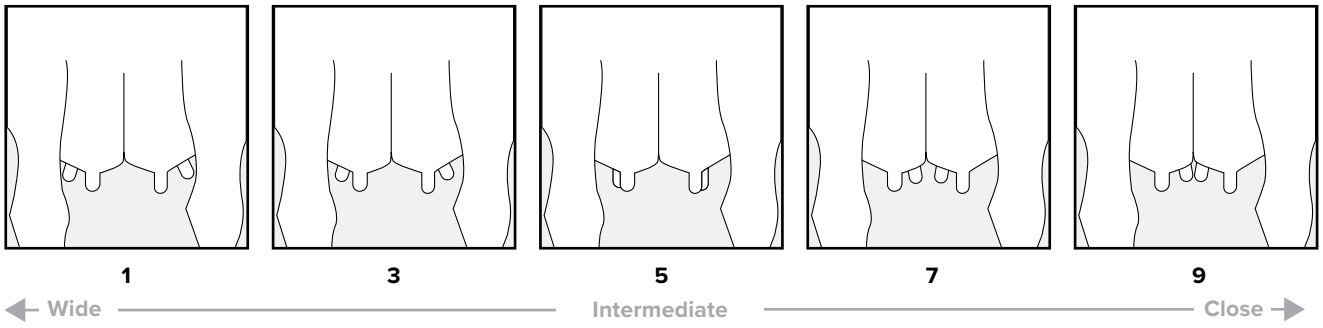


Refer to size and shape of four main teats when assessing

Teat placement

Front teat placement

Scoring range 1 - 9

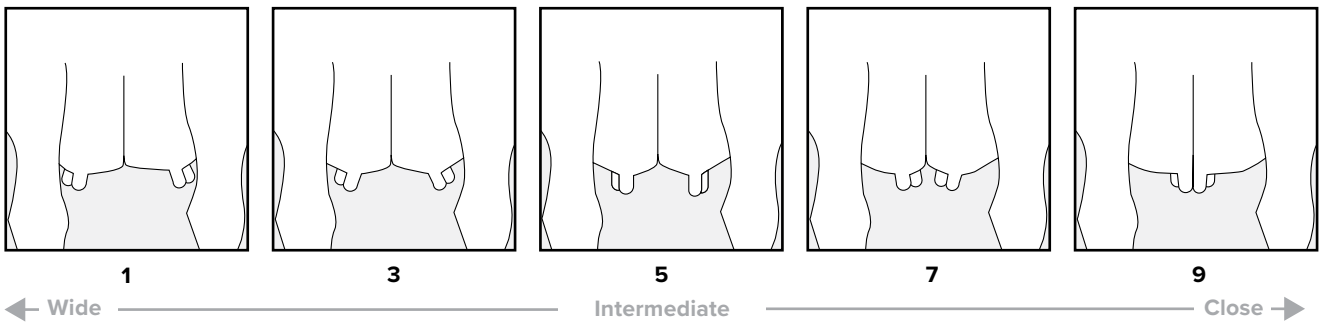


SOURCE: DataGene

Assessed as teat placement from centre of quarter

Rear teat placement

Scoring range 1 - 9



SOURCE: DataGene

Assessed as teat placement from centre of quarter

REFERENCES

2020. Type ABV's explained. DataGene. Available at: <www.datagene.com.au/sites/default/files/Upload%20Files/02%20Type%20ABVs%20explained%20Mar%202020.pdf>

Breedplan.une.edu.au. n.d. Recording structural soundness. [online] Available at: <www.breedplan.une.edu.au/media/1zhdxy51/recording-structural-soundness-information.pdf>

DS, B., MR, M., PC, I., V, P. and T, S., 2021. BULLCHECK: Veterinary Bull Breeding Soundness Evaluation. 4th ed. St Leonards, Australia: Australian Cattle Veterinarians A Special Interest Group of the Australian Veterinary Association Limited, p.36.

Sundstrom, B. and Cumming, B., 1998. Better bull buying. 9th ed. [Sydney]: NSW Agriculture.

11. REPRODUCTION

11.1 PREGNANCY STATUS

Definition

Reproduction terms identify the pregnancy status of an animal.

Measurement technique

Pregnancy status may be determined by the following methods:

- Manual palpation (rectal technique)
- B-mode ultra-sound (rectal technique)
- Blood testing (sampling from tail vein)
- Milk testing
- Blood test*
- Milk PAG testing*

* noting these tests have lower sensitivity and specificity than either rectal palpation or ultrasound at certain gestational ages

Measurement terms

Pregnancy status

a. Not pregnant (NP)

Meaning that no pregnancy can be determined by any one of the above methods or not more than eight weeks in calf and/or not knowingly mated (joined).

b. Not detectably pregnant (NDP)

Meaning that no pregnancy or pregnancy more than five weeks in calf can be detected by either manual palpation (animal has palpably normal reproductive tract), B-mode ultra-sound or blood test methods of pregnancy diagnosis.

Supported by the ACV PREgCHECK™ Program through a tail tag banded with the colours of green and white# or similarly branded ear tags.

c. Pregnancy tested in calf (PTIC)

Meaning that a pregnancy can be detected (foetus) by any method stated above.

A signed statement of pregnancy should be made available for any terms of trade purpose. It is important to be informed on any specific State requirements.

The signing of a Statement of Pregnancy must adhere to the Regulations which apply in the State or Territory the cattle are located at the time of the diagnosis.

Supported by the AVA/ ACV PREgCHECK® Program through tail tags banded with the colours:

i. blue and orange when determined to be under four months pregnant# or similarly branded ear tags.

ii. red and yellow when determined to be over four months pregnant# or similarly branded ear tags.

#Tail tags and associated descriptors are subject to a Certification Mark and are the property of the Australian Cattle Veterinarians.

d. Unjoined

Meaning not known to be mated.

e. Joined

Female cattle have been running together with bulls or been artificially inseminated.

REFERENCES

(AVA), A., n.d. PREgCHECK® (NCPD) Scheme. [online] Ava.com.au. Available at: <www.ava.com.au/about-us/ava-groups/cattle/resources/schemes/pregcheck/>

2016. Guidelines For Uniform Beef Improvement Programs. 9th ed. Prairie, MS: Beef Improvement Federation, p.10.

11.2 CALVING EASE

Definition

Calving ease describes the degree of intervention/assistance provided to the dam to expel the calf.

Measurement technique

Calving ease is measured at birth by the level of assistance provided to the cow. Calving ease is affected by many environmental factors and several genetic ones.

Measurement terms

Calving ease is measured on a scale of 1 to 6, where 1 is ideal.

SCORE	LEVEL OF ASSISTANCE	DESCRIPTION OF ASSISTANCE
1	UNASSISTED	Cow calved unassisted/no difficulty - (either through observing the calving or noting cows with calves after no apparent difficulty)
2	EASY PULL	One person without mechanical assistance or calf unassisted but cow and/or calf show signs of difficult birth
3	HARD PULL	Two people without mechanical assistance One person with mechanical assistance
4	SURGICAL ASSISTANCE	Veterinary intervention required
5	ABNORMAL	Malpresentation e.g. Breech
6	ELECTIVE SURGICAL	Surgical removal of calf before the cow has the opportunity to calve

REFERENCES

Breedplan.une.edu.au. n.d. BREEDPLAN - Understanding Calving Ease EBVs. [online] Available at: <www.breedplan.une.edu.au/understanding-ebvs/understanding-calving-ease-ebvs/#:~:text=Calving%20difficulty%20has%20an%20obvious,additional%20labour%20and%20veterinary%20expense.>

11.3 MALE REPRODUCTION

Definition

Reproduction terms to identify the breeding status of a male animal.

Measurement technique

Serving Ability

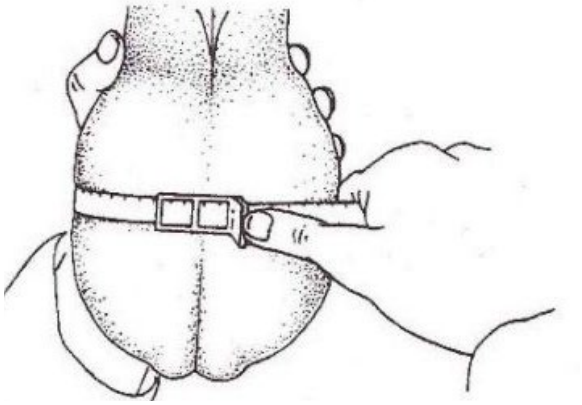
This is a physical observation of a bull's demonstrated ability to serve, to identify any structural or reproductive abnormalities. The 'test' must be supervised by a licensed veterinarian who is a member of the Australian Cattle Veterinarians (ACV). Used in conjunction with a number of other traits such as scrotal circumference.

Scrotal circumference

The scrotal circumference is a measurement in centimetres measured to one decimal point.

Scrotal circumference measurements should be recorded by pulling the testes firmly down into the lower part of the scrotum and placing a measuring tape around the widest part of the testes.

Figure 13. Scrotal circumference measurement site



Source: BREEDPLAN – breedplan.une.edu.au

When measuring scrotal circumference, it is important to remember:

- While measuring techniques vary slightly, it is important to use a consistent technique for a whole group of cattle.
- The tension applied to the measuring tape should be just sufficient to cause a slight indentation in the skin of the scrotum.
- Avoid placing the thumb of the hand holding the neck of the scrotum between the cords. This will cause separation of the testes and an inaccurate measurement.
- A variety of scrotal circumference measuring devices are commercially available from agricultural supply stores or organisations such as the Australian Cattle Veterinarians. Measuring tapes that don't stretch are more reliable.

BULLCHECK™

Accredited veterinarians are able to conduct a standardised Bull Breeding Soundness Evaluation BULLCHECK™ (VBBSE).
A full BULLCHECK™ (VBBSE) of an animal includes identification, history (including vaccinations) plus five key components, namely:

- A general physical examination including structure (conformation) and upper reproductive tract
- An examination of the testes and measurement of scrotal size
- A serving assessment to evaluate libido and mating ability
- Collection and assessment of a semen sample
- Laboratory examination of sperm morphology.

Measurement terms

Scrotal circumference standards are set relative to known age in months.

A 365-day Yearling Scrotal Circumference (YSC) is calculated as:

- YSC = Measured circumference (cm) + [(365- Age in Days) x Age Adjustment Factor]

Breed Societies may set scrotal circumference standards and age adjustment factors for their breed. The age adjustment is provided by the breed society.

REFERENCES

Breedplan.une.edu.au. n.d. Recording Scrotal Circumference Measurements. [online] Available at: <www.breedplan.une.edu.au/media/iy1ept5c/recording-scrotal-circumference-measurements.pdf>

DS, B., MR, M., PC, I., V, P. and T, S., 2021. BULLCHECK: Veterinary Bull Breeding Soundness Evaluation. 4th ed. St Leonards, Australia: Australian Cattle Veterinarians A Special Interest Group of the Australian Veterinary Association Limited, p.36.

12. LIVESTOCK TREATMENTS

Definition

Livestock treatments include husbandry procedures, health conditions and health treatments.

Purpose

To consistently record livestock husbandry procedures, health conditions and treatments, so as market access for Australian meat products is never jeopardised.

Measurement technique

Husbandry procedures

PROCEDURE	PART OF BODY
Branding	Hides
Castration	Testicles
Dehorning/disbudding	Head/poll (horns)
Ear marking, ear tagging, ear tattoos	Ears
Injection Subcutaneous, intravenous, intramuscular	Varies depending on type of injection
Spaying	Ovaries or fallopian tubes
Tail docking	Tail
Treatment for external parasites	Body, injectable or ear tag
Treatment for internal parasites	Oral, backline or injectable
Vaccination	Neck
Weaning	

The Animal Welfare Standards and Guidelines for Cattle provides further guidance on the responsibilities of handling cattle. They are based on current scientific knowledge, recommended industry practice and community expectations. Producers should check with their State Department of Agriculture as to any legal requirement for husbandry practice.

Pain relief

The provision of pain relief with routine husbandry practices is now an expectation. Livestock pain management has not only been shown to help animals recover faster but represents best practice in animal welfare.

Pain relief products available include local anaesthetics and Non-Steroidal Anti-Inflammatory Drugs (NSAIDs) that can be obtained from a veterinarian. Most pain relief products help with some of the pain an animal experiences, but not all. Using a combination of products will provide greater pain relief. Local anaesthetics provide relief from immediate pain, but are short-acting. NSAIDs provide a longer duration of pain relief but do not deal well with the immediate pain.

Each pain relief compound has a different purpose, so it is important to match the planned procedure with the most relevant compound or combination of compounds. If in doubt, veterinarians are best placed to advise.

The *Animal Welfare Standards and Guidelines for Cattle* are being regulated progressively by state/territory governments and may result in regulations within a state or territory, for the use of pain relief to be compulsory for nominated husbandry practices. Producers are encouraged to consider pain relief for aversive procedures on all their cattle.

For details of regulations for pain relief, refer to the *Animal Welfare Standards and Guidelines for Cattle,* available at www.animalwelfarestandards.net.au.

Health conditions

Health conditions describe disease or other health conditions and can be used in conjunction with recording of the health treatment(s).

The ICAR Central Health Key is adopted in the Livestock Language Guidelines to provide globally consistent coding of health conditions.

More precise description can be recorded using the extensive ICAR Central Health Key codes within the primary 1 to 9 descriptions.

CODE	HEALTH CONDITION
1	Organ conditions
2	Reproduction disorders in females
3	Reproduction disorders in males
4.	Infectious disease and other microbe-related diseases (except local infections of udder and claws)
5.	Parasitoses (parasite infestations)
6.	Metabolic diseases and deficiencies
7.	Poisoning
8.	Behavioural disorders and general findings
9.	Health-related information not representing diagnoses

Source: ICAR Central Health Key | ICAR, 2020

Health treatments

Veterinary drugs should only be used when necessary, to ensure that animals that are treated get an effective course of treatment and that there is minimal risk of adverse side effects, including carcase residue or physical contaminants and development of resistance. Treatments must strictly adhere to label directions.

The Australian Pesticides and Veterinary Medicines Authority (APVMA) maintains a public register of all registered animal health products and for each the Export Slaughter Interval (ESI) that has been determined. The register is updated on a regular basis or as may be required. ESIs are critical for market access requirements.

Health treatments may also include feed additives, Hormonal Growth Promotants, mineral injections, licks, rumen modifiers, and manufactured pellets. Make note the contents or use of these need to be recorded on declarations.

Each product has an allocated number to form the basis of on-farm recording.

The APVMA Cattle ESI document can be found at www.apvma.gov.au/node/26531. The APVMA regularly updates this list to include new or revised ESIs. This list provides the following information:

- Product number
- APVMA registered product name
- Withholding Period - WHP (days)
- Export Slaughter Interval - ESI (days)

Records

Livestock treatments must be recorded and passed on when selling stock, by completing an LPA NVD Waybill and National Cattle Health Declaration. Adverse reactions to chemicals should be monitored to minimise the risk of unknown chemical residue. Where relevant, the Withholding Period and Export Slaughter Interval must also be recorded on the LPA NVD Waybill to ensure that livestock are not processed for human consumption before these have expired and or where a physical contaminant is known to be present in an animal.

Cattle Heath Declarations are an essential way for producers to provide information about the health status of the cattle they are selling, providing assurance when livestock are entering the food chain.

Records should include:

- Treatment date
- Chemical/drug used, including batch number and expiry date
- Dose rate
- Adverse reactions (if applicable)
- Broken needle still in animal (if applicable)

Records must include:

- Relevant Withholding Period and/or Export Slaughter
- Interval (and date of expiry)

Measurement terms

An Export Slaughter Interval (ESI) is the minimum time that must elapse between administration of a veterinary chemical to animals and their slaughter for export. ESIs manage differences between Maximum Residue Limits (MRLs) allowed for chemicals in Australia and the MRLs of its trading partners. ESI advice is particularly important for quality assurance schemes, and especially for producers filling out the National Vendor Declaration (NVD) forms as part of the whole-of-chain management of exported product. ESIs have been agreed to by the cattle industry and the registrant of the veterinary chemical.

The Withholding Period (WHP) is the minimum period which must elapse between last administration or application of a veterinary chemical product, including treated feed, and the slaughter, collection, harvesting or use of the animal commodity for human consumption. WHPs are mandatory for domestic slaughter and are on the label of every registered product.

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Veterinaryhandbook.com.au. 2021. Veterinary handbook for cattle, sheep and goats > Home. [online] Available at: <www.veterinaryhandbook.com.au/>

13. COATS AND HIDES

13.1 COAT SCORE

Definition

Variation exists in coat type between animals, and a proportion of this variation is due to genetic differences.

Purpose

Coat scores are a measure of adaptability of animals to different production environments. For example, sleek coated animals are more tropically adapted than hairy coated animals, which are more adapted to colder climates.

Measurement technique

Coat scores are recorded on a 1-7 scale.

Assessment should be conducted at the coldest time of the year for the production environment to gain maximum variation.

Measurement terms

COAT SCORE	COAT TYPE	DESCRIPTION
1	EXTREMELY SHORT	Hairs extremely short and closely applied to the skin. Found in Bos indicus, Tropical Adapted Bos taurus and in some of their crossbreds.
2	VERY SHORT	Coat sleek, hairs short and coarse, lying flat, just able to be lifted by the thumb.
3	FAIRLY SHORT	General appearance smooth-coated. Hairs easily lifted, usually fairly coarse.
4	FAIRLY LONG	Coat not completely smooth, somewhat rough, patches of hairs being curved outwards, or whole coat showing sufficient length to be ruffled.
5	LONG	Hairs distinctly long and lying loosely; predominantly coarse.
6	HAIRY	Hairs erect, giving fur-like appearance. Fingers are partly buried in the coat. Fine hairs of under-coat give soft handle.
7	VERY HAIRY	The more extreme expression of 6, with greater length, and heavy cover extending to neck and rump.

REFERENCES

Breedplan.une.edu.au. n.d. Recording Coat Scores. [online] Available at: <www.breedplan.une.edu.au/media/435dbqfx/recording-coat-scores.pdf>

13.2 MUD AND DAG CONTAMINATION

Definition

Dags are an accumulation of faecal and soil particles that adhere to hair in the coats of cattle. They are formed when manure, dirt and hair are bound together.

Purpose

Dags and mud contamination present major challenges across the entire beef supply chain due to:

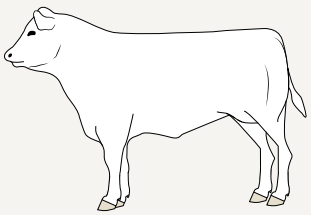
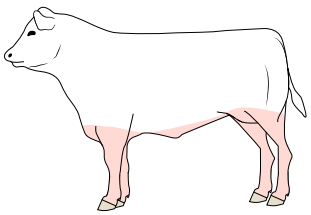
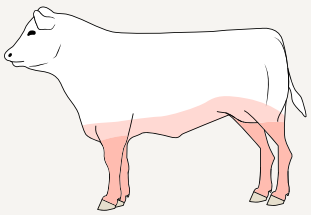
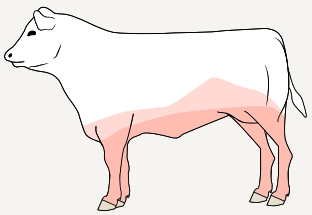
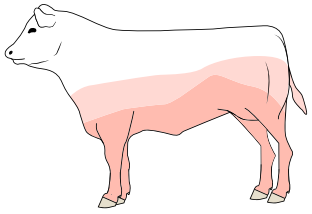
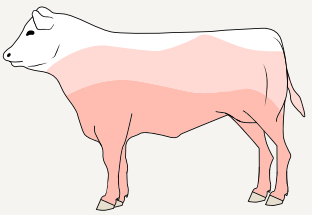
- concerns regarding the welfare and health of animals
- increased costs associated with the cleaning and processing of daggy cattle
- workplace health and safety issues associated with dag removal from live animals
- the potential to compromise food safety through carcase contamination.

Individual supply chains or livestock buyers may request description of mud and dag contamination.

Measurement technique

Visual assessment using guides below.

Measurement terms

CLEANLINESS SCORE	VISUAL ASSESSMENT	DESCRIPTION
0		Clean cattle. No visible mud or faeces on the coat
1		No adhered dags are visible. Fresh manure/ mud may be seen on legs, and isolated patches below the line of the rib cage to brisket.
2		Fresh manure, mud visible on the legs, and below the line of the front leg elbow to stifle joint and the underline. New dags (soft) visible
3		Fresh manure/ mud adheres to coat below the line of the stifle joint to the point of the shoulder (side of the animal) and the legs.
4		Adhered dags below the line of the stifle joint to the point of the shoulder (side of animal) and on legs.
5		Extensive adhered dags cover the ribs, underline, neck, shoulder, hindquarter and legs. Notify buyer before consigning.

REFERENCES

Wockner, K. and Jewell, M., 2019. Clean cattle manual. 1st ed. Sydney: Meat & Livestock Australia.

van Moort, J., Jewell, M., Demaria, S. and Watts, P., 2018. Cost of feedlot dags to Australian beef industry. [online] North Sydney: Meat & Livestock Australia Limited. Available at: www.mla.com.au/contentassets/0bd6c62ffa3944a187dacbb8f2567b42/b.flt.0165_final_report.pdf

13.3 TICKS

Definition

The cattle tick, *Rhipicephalus microplus,* affects primarily cattle but can also infest other species. It is responsible for transmitting three blood-borne tick fever organisms, *Babesia bovis*, B. bigemina and *Anaplasma marginale,* which cause Tick Fever. Theileria is a parasite infection also transmitted by ticks.

Purpose

Ticks are costly in terms of both loss of production as well as handling and treatment of infected animals. Additionally, ticks can downgrade hide quality due to weakening the hide.

Tick resistance is recognised as an economically important production trait in grazing enterprises. Research has shown that variation exists in tick resistance between animals, and that a proportion of this variation is due to genetic differences.

Measurement technique

Visual assessment using guides below.

The best time to identify the cattle tick is when it is at the adult stage.

Common sites to check for ticks

SITE	DESCRIPTION
Anus area	Observed from the rear of the animal, the area under the tail and around the anus
Scrotum/ udder	Observed from the rear of the animal, the area below the tail and around the anus down to and including the udder/scrotum
Ear	The inside area of the right and left ear

Measurement terms

The Tick Scoring Method uses Scores 0 - 5:

Only ticks over 4.5 mm diameter should be included in the score (no seed ticks).

'Side' is an entire side of an animal including inside of flank and legs.

For further information on the management of ticks, visit www.tickboss.com.au

SCORE	RESISTANCE	ESTIMATED NUMBER OF OBSERVABLE TICKS PER SIDE*
0	CLEAN	No observable ticks
1	VERY HIGH RESISTANCE	10 or less
2	HIGH RESISTANCE	11-30
3	AVERAGE RESISTANCE	31-80
4	LOW RESISTANCE	81-150
5	VERY LOW RESISTANCE	Over 150

REFERENCES

2018. ICAR Guidelines for Beef Cattle Production Recording. Utrecht, The Netherlands: ICAR, p.61.

Tbts.une.edu.au. 2017. Recording Tick Scores. [online] Available at: <www.tbts.une.edu.au/media/1066/recordingtickscores.pdf>

13.4 BUFFALO FLY LESIONS

Definition

The buffalo fly is a small biting fly 3.5 – 4 mm long. Variation exists in buffalo fly hypersensitivity between animals, with a proportion of this variation due to genetic differences.

Purpose

Buffalo fly irritate cattle, interrupt feeding and cause lesions, especially when infestations are high. A small parasitic worm *(Stephanofilaria spp.)* and/or a specific bacterium *(S. hyicus)* associated with buffalo fly bites and causes skin lesions. These lesions result in permanent hide damage, decreasing the value of the hide and may restrict access of stock into the live export trade.

Measurement technique

Buffalo fly lesion scores are a visual assessment and should be taken in late summer through to early autumn when the buffalo fly numbers are at their greatest. Buffalo fly lesion scores can be recorded on animals of all ages; however fly scars will be more prevalent on older animals.

Measurement terms

The Buffalo fly scoring method is a score from 1 to 5:

For further information on the management of buffalo fly, visit www.flyboss.com.au

SCORE	DESCRIPTION
1	No visible lesions.
2	One to two lesions less than or equal to 7cm diameter.
3	Three to six multiple lesions.
4	Seven to ten multiple lesions or at least three sites such as neck, belly, and withers.
5	Multiple lesions more extensive than score 4.

REFERENCES

Breedplan.une.edu.au. n.d. BREEDPLAN - Recording Buffalo Fly Lesion Scores. [online] Available at: <www.breedplan.une.edu.au/recording-performance/recording-buffalo-fly-lesion-scores-with-video/>

13.5 RINGWORM

Definition

Ringworm is a skin lesion, usually circular and hairless, caused by a fungal infection of the hair follicle and outer layer of skin. *Trichophyton verrucosum* is the principal agent affecting cattle.

Purpose

The presence of ringworm lesions can influence export market access and value. Affected animals may be rejected or have their market value downgraded if lesions are detected at destination.

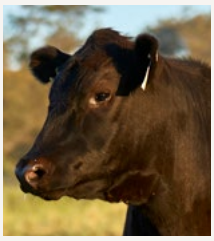
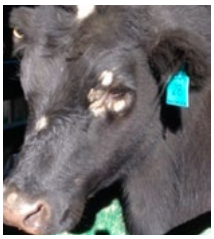
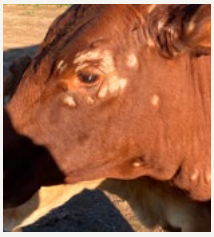
Measurement technique

Visual assessment using guides below.

Lesions are typically circular, up to 3cm in diameter, with larger patches being the result of coalesced lesions. The head and neck are usually most affected, but lesions may occur on other parts of the body. Initially, the skin is moist and reddened; later it is dry, scaly and grey.

Measurement terms

The Ringworm Scoring Method uses scores 0 - 5.
The following system can be applied for calves and adult cattle.

CLEANLINESS SCORE	VISUAL ASSESSMENT	DESCRIPTION
0		Nil visible
1		Individual lesions on neck and head including around eye socket
2		Lesions on neck and head area form a crusty scab Lesions may be overlapping

CLEANLINESS SCORE	VISUAL ASSESSMENT	DESCRIPTION
3		Lesions at neck, head, dewlap, brisket and shoulder blade.
4		Lesions extend from shoulder to 13 th long rib along the animals side. Hairless patches on the hide.
5		Hairless area extends from head to over the long ribs

Source: NSW Local Land Services

REFERENCES

Veterinaryhandbook.com.au. 2021. Veterinary handbook for cattle, sheep and goats > Home. [online] Available at: <www.veterinaryhandbook.com.au/>

14. PHYSICAL WELFARE

14.1 ANIMAL WELFARE

Definition

a. Welfare Standards

The welfare standards and guidelines for the Australian cattle industry are described in the publication *"Australian Animal Welfare Standards and Guidelines for Cattle. Ed 1 Version 1. January 2016".*

The Welfare Standard and Guidelines are accepted in all States and Territories.

b. Australian standards for land transport – Cattle

The land transport standards for cattle are described in the publication *Animal Welfare Standards and Guidelines for the Land Transport of Livestock Edition One Version 1.1 September 2012.*

This Standard includes the requirements to comply with the transport of 'bobby' calves.

The Standard is legislated in all States and Territories

c. *Australian standards and guidelines for saleyards and depots*

The standards and guidelines for the welfare of livestock at saleyards and depots (meaning receival facilities for livestock prior to further transport) are described in the publication *'Australian Animal Welfare Standards and Guidelines for Saleyards and Depots (Feb 2018)'*.

d. *The Australian Livestock Processing Industry Animal Welfare Certification System (AAWCS)*

The AAWCS is an independently audited certification program used by Australian livestock processors to demonstrate compliance with the industry best practice animal welfare standards titled the *'Industry Animal Welfare Standards for Livestock Processing Establishments Preparing Meat for Human Consumption'.* The AAWCS covers all animal welfare activities at a participating livestock processing establishment – from receival of livestock at the establishment to the point of humane processing.

All jurisdictions support the Standards and Guidelines.

Measurement Technique

The classifications within the welfare scores allow producers to assess animal of physical appearance at a point in time. The classifications help describe emaciated cattle, classify welfare risk cattle based on physical appearance, implement appropriate management for improved welfare status and make better informed decisions on the fitness of an animal to be transported.

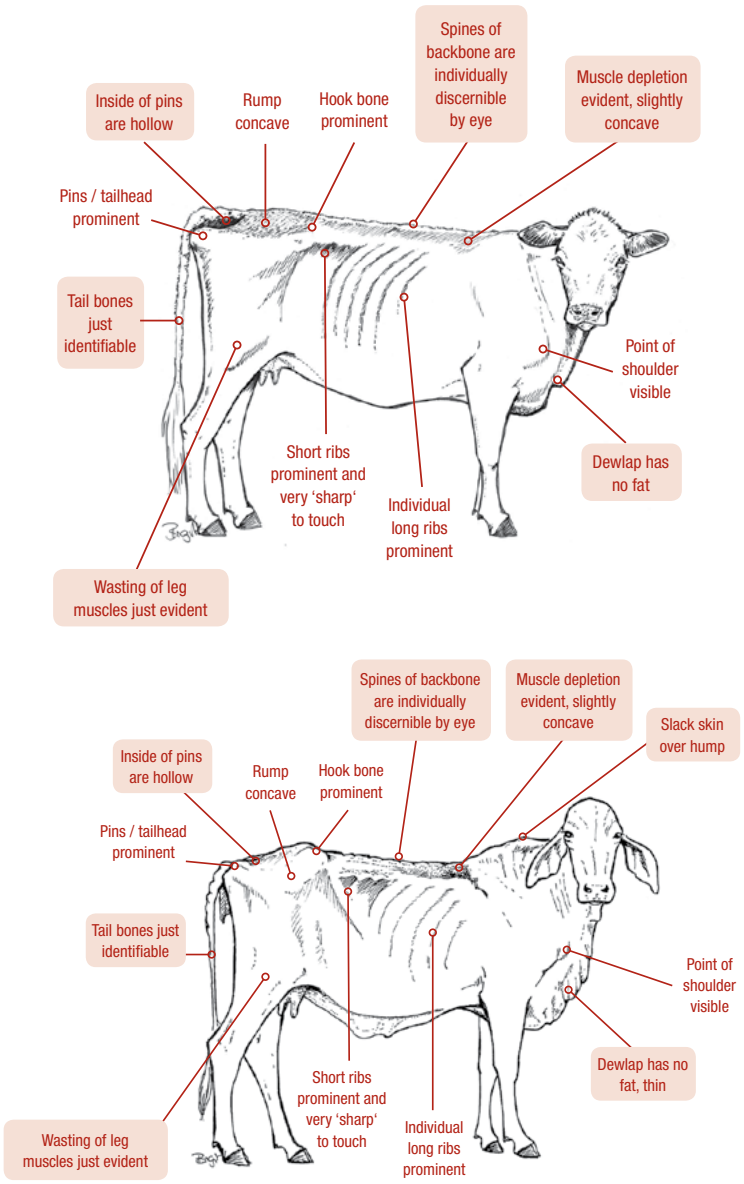
FAT SCORE	1	Decreasing muscle ↓	Increasing skeletal visibility ↓
WELFARE SCORE	HIGH RISK 1 (HR1)		
WELFARE SCORE	HIGH RISK 2 (HR2)		
WELFARE SCORE	DOWNER		

Visual Guides for assessing welfare scores are available in the *National Guide to describing and managing beef cattle in low body condition score.*

Visual Guides for assessing dairy breeds can be found in the *Dairy Australia Cow body condition scoring handbook.*

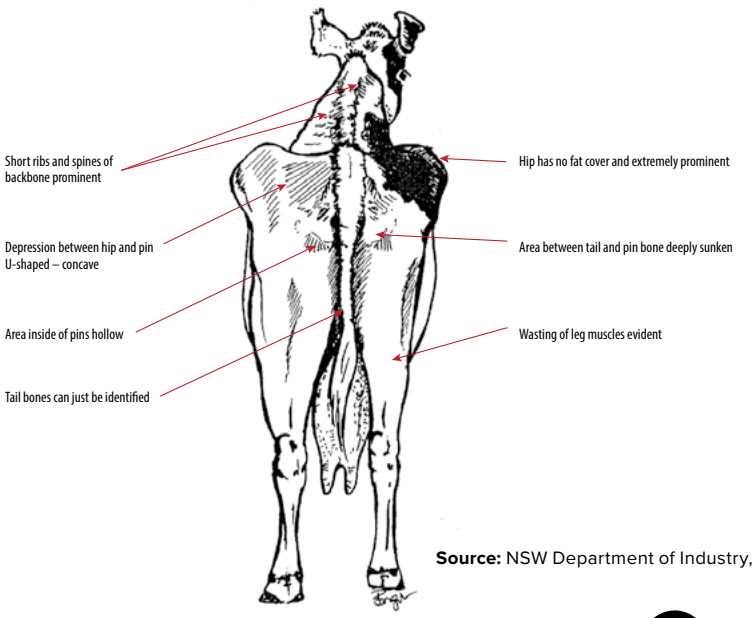
'Is the animal fit to load' is a national guide to the pre-transport selection and management of livestock to ensure animals meet *Australian Animal Welfare Standards and Guidelines for the Land Transport of Livestock.*

Figure 14. Physical Welfare Score HR1 points of description for British and Brahman animals



Source: Meat & Livestock Australia

Figure 15. Welfare Score HR1 points of description for dairy animals



Source: NSW Department of Industry, Skills and Regional Development

Measurement Terms

Assessment guidelines for determining welfare scores

WELFARE SCORE	VISUAL ASSESSMENT	MANUAL ASSESSMENT	TRANSPORT
HR 1	Muscle depletion is now evident at the back and loin, and the hind leg muscles • The rump muscle is concave • Spines of the backbone are individually discernible by eye • Long ribs, pin bones and tailhead prominent • Rump muscle concave, muscle wastage in loin and leg muscle evident • The inside of the pins are hollow • Stifle joint not identifiable • Udder is beginning to shrink	• Short ribs all prominent and very sharp to touch • Skin is less pliable • Tail bones discernible by touch • Slacker skin over hump (Bos indicus)	Transport to abattoir and agistment only. Unsuitable to travel long distances.
HR2	• The animal is emaciated • The hips, pins, tailhead, long ribs and short ribs are individually identifiable • Inside of pins is deeply sunken to the bone • Wasting in the leg muscles has occurred to the extent that stifle joint is identifiable • Deeply concaved rump muscle between hooks and pins • Udder is now shrunk and tucked up to the body • Dewlap is a skinfold and the sternum identifiable • Any dung will show evidence of poor rumen function e.g. undigested feed, mucous membrane, dirt, watery.	• The spines of the backbone are individually identifiable – pointed to the touch • Skin is tight • Tail bones can be easily felt • Loose skin over the hump of Bos indicus and Bos indicus cross cattle	Unable to be transported without prolonged intensive management
Downer	AS ABOVE PLUS • Locomotion is difficult/ unsteady gait, or not possible, 'plaiting' motion of hind legs, difficulty maintaining balance • 'Paddle' marks from feet • movement/body or head movement where animal is sitting/lying • Eyes are 'tearing', sunken and glazed • Brown liquid faeces indicates no/limited rumen function	AS ABOVE PLUS • Immobile with zero flight distance despite attempted flight behaviour • No response to any external stimuli • If lying down the animal is unlikely to stand without assistance because muscle strength is depleted	Seek Veterinary advice for Euthanasia

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2018. Australian Animal Welfare Standards and Guidelines – Livestock at Saleyards and Depots.. 1st ed. Department of Economic Development, Jobs, Transport and Resources, The Victorian Government.

Blackwood, I., Exton, S., Littler, B. and Siddell, J., 2013. A national guide to describing and managing beef cattle in low body condition. 1st ed. North Sydney: Meat and Livestock Australia.

2019. Is the animal fit to load?. 2nd ed. Sydney, NSW: Meat & Livestock Australia.

2013. Cow body condition scoring handbook. 1st ed. Dairy Australia.

2013. Welfare scoring nutritionally deprived beef cattle, dairy cattle and their crosses, sheep and horses. NSW Department of Primary Industries, a part of NSW Department of Industry, Skills and Regional Development.

2022. Australian Livestock Processing Industry Animal Welfare Certification System (AAWCS). [online] Available at: <www.aawcs.com.au/

14.2 LAMENESS

Definition

Lameness, due to injury or disease in the foot or leg, is an important welfare consideration.

Purpose

Cattle mobility is an important component of cattle wellbeing and can impact on animal productivity. Lameness or mobility assessments are also used to determine the fitness of an animal to undertake a journey and when intervention is required.

'Is the animal fit to load' guide should be referred to when making decisions on transporting animals.

Measurement technique

The creation of a scoring system to evaluate lameness of cattle provides the industry with a tool to benchmark and improve the welfare of cattle. Lameness Score is a 5-point system from 1 being ideal to 5 being very lame.

Measurement terms

Measurement terms to describe lameness are provided and help to determine important welfare and production issues affecting cattle. The ICAR Recommended Standards for lameness recording are adopted in this Guideline.

Assessment guidelines for determining lameness scores

LAMENESS SCORE		DESCRIPTION	
1	Normal	The animal stands and walks with a flat back posture. Smooth and fluid movement, the gait is normal.change in gait.	All legs bear weight equally Joints flex freely Head carriage remains steady as the animal moves
2	Mildly lame	Te animal stands with a level-back posture but develops an archedback posture while walking. The ability to move freely not diminished.slight limp but keeps up with normal cattle in the group.	All legs bear weight equally Joints slightly stiff Head carriage remains steady
3	Moderately lame	An arched-back posture is evident while both standing and walking. The gait is affected and is best described as short striding with one or more limbs. Capable of locomotion but ability to move freely is compromised.	Slight limp can be discerned in one limb but the lameness is often bilateral Joints show signs of stiffness but do not impede freedom of movement. Shorter strides Head carriage remains steady
4	Lame	An arched-back posture is always evident and gait is best described as one deliberate step at a time. The animal favours one or more limbs/feet. Ability to move freely is obviously diminished	Reluctant to bear weight on at least one limb but still uses that limb in locomotion Strides are hesitant and deliberate, and joints are stiff Head bobs slightly as animal moves in accordance with the sore limb/hoof making contact with the ground Not fit to load
5	Severely lame	The animal additionally demonstrates an inability or extreme reluctance to bear weight on one or more of her limbs/feet. Ability to move is severely restricted. Must be vigorously encouraged to stand and/or move.	Extreme arched back when standing and walking Obvious joint stiffness characterized by lack of joint flexion with very hesitant and deliberate strides One or more strides obviously shortened Head obviously bobs as sore limb/hoof makes contact with the ground Not fit to load

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2019. Is the animal fit to load?. 2nd ed. Sydney, NSW: Meat & Livestock Australia.

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Available at: <www.aawcs.com.au/>

NATIONAL BOVINE LIVESTOCK LANGUAGE GLOSSARY OF TERMS

General terms

TERM	DESCRIPTION
Commission	Fee charged by an agent or assessor to negotiate a sale with a buyer.
Commission buyer	A buyer who works for different clients and is paid a commission per head for this service by the client.
Del credere	An insurance charge for selling agents to guarantee that the buyer is solvent.
Direct selling	Cattle are sold by the seller directly to the buyer. Widely used by processors and feedlots to buy cattle.
Feedlot	A constructed facility with designated water points where cattle are confined with a stocking density of 25m^2 per Standard Cattle Unit or less and are only fed a prepared ration for the purposes of production
Live weight sales	Cattle are sold on the following: 1. Price is in cents (to one decimal point) per kilogram live weight by a. Bid at auction. b. Paddock sale c. Weight at delivery 2. Cattle are weighed relative to a nominated curfew period which can include pre or post transport weights.
Open auction	Cattle are sold on a $ per head basis
Online auction	Internet based sale by description system. Can be described as: Simultaneous: All lots in an auction are offered for sale at the same time. Sequential: Lots in an auction are offered for sale sequentially at one time. Interfaced: An interfaced Auction comprises a physical sale with the additional of online bidding functionality, and may include stud or commercial livestock, or other commodities. An interfaced sale may include Audio or Video streaming.
Over the Hooks (OTH)	'Over the hooks' meaning cattle are sold directly to a processor and payment is based on Hot Standard Carcase Weight. www.ausmeat.com.au/WebDocuments/Over_the_Hooks_Trading_of_Livestock_Guidelines.pdf
Private sales	Cattle sold between two parties with mutually agreed terms of trade.
Salary buyer	A buyer working for one company only.
Saleyard	A premise with permanent livestock delivery, holding and selling facilities where the primary purpose of the establishment is for the gathering of livestock from several sources for exchange of ownership; that is, livestock are bought and sold. Equivalent to livestock exchange and livestock selling centre.
Specification grids	Published by processors and show the specifications of the carcase on which payment is made.
Stock agent	A registered (State jurisdiction) Stock and Station Agent.

Industry programs and accreditations

TERM	DESCRIPTION
Australian Live Exports Council (ALEC)	The Australian Livestock Exporters' Council is a member-based, peak industry body representing Australia's livestock export sector. Home - Australian Livestock Exporters' Council (ALEC) auslivestockexport.com/
Australian Livestock Processing Industry Animal Welfare Certification System (AAWCS)	AAWCS is an independently audited certification program used by livestock processors to demonstrate compliance with the industry best practice animal welfare standards from receival of livestock, to the point of humane processing. www.aawcs.com.au/
Australian Lotfeeders Association (ALFA)	An insurance charge for selling agents to guarantee that the buyer is solvent. www.feedlots.com.au
Australian Meat Industry Language and Standards Committee (AMILSC)	The Australian Meat Industry Language and Standards Committee (AMILSC) comprises industry representatives. The committee controls trade descriptions and AUS-MEAT National Accreditation Standards requirements.
Australian Meat Industry Council (AMIC)	AMIC is the peak body representing retailers, processors and smallgoods manufacturers in Australia. https://amic.org.au/
Australian Meat Processing Corporation (AMPC)	AMPC is the specialist research and development (R&D) provider for Australian meat processors. AMPC's mandate is to provide research, development, and extension (RD&E) services that improve the sustainability and efficiency of the sector. https://www.ampc.com.au
Australian Pharmaceutical and Veterinary Medicines Authority (APVMA)	The Authority which determines the Export Slaughter Intervals and the Withholding Periods for the chemical applications and treatments made to all livestock, including cattle. www.apvma.gov.au
Australian Registered Cattle Breeders Association (ARCBA)	ARCBA is a representative body for for the Australian beef cattle seedstock industry.
Australian Standards for the Export of Livestock (ASEL)	The Standards for the export of cattle. Australian Standards for the Export of Livestock - Department of Agriculture www.awe.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/australian-standards-livestock
AUS-MEAT Limited	Industry owned company operating as a joint venture between Meat & Livestock Australia and the Australian Meat Processor Corporation. The 'Standards body' responsible for setting standards for meat production and description. ausmeat.com.au
Australian Cattle Veterinarians (ACV)	Special interest group of the Australian Veterinary Association.
Cattle Council of Australia (CCA)	CCA is the peak producer organisation representing Australia's beef cattle producers. www.cattlecouncil.com.au
Eastern Young Cattle Indicator (EYCI)	Published weekly by MLA as a cattle market indicator calculated from the National Livestock Reporting Service reports.
Export Meat Industry Advisory Committee (EMIAC)	EMIAC is a consultative body between the export meat industry and the Australian Government. Its main function is to consider technical issues affecting the export meat sector. It also provides policy advice on many major issues such as residues, pathogens, international requirements including market access and food safety issues affecting meat. https://www.agriculture.gov.au/biosecurity-trade/policy/partnerships/consultative-committees/emiac

Exporter Supply Chain Assurance System (ESCAS)	The quality assurance program that underpins the export of live animals from Australia. Exporters are required to have an ESCAS in place for all feeder and slaughter livestock. It does not apply for breeding livestock. Exporter Supply Chain Assurance System (ESCAS) - Department of Agriculture www.awe.gov.au/biosecurity-trade/export/controlled-goods/live-animals/livestock/information-exporters-industry/escas
European Union Cattle Accreditation Scheme (EUCAS)	A national animal production scheme that guarantees full traceability of all animals through the National Livestock Identification System (NLIS). EUCAS allows Australia to meet the European Union (EU) market requirements for beef by segregating cattle that have never been treated with hormonal growth promotants (HGPs) at any time. Administered by the Australian Government, Department of Agriculture, Water and Environment. European Union Cattle Accreditation Scheme EUCAS - Department of Agriculture www.agriculture.gov.au/biosecurity-trade/export/controlled-goods/meat/elmer-3/eucas
Global Animal Partnership (GAP)	A non-profit charitable organization that brings together farmers, scientists, ranchers, retailers, and animal advocates with the common goal of improving the welfare of animals in agriculture. The GAP 5-Step program is the only farm animal welfare rating system developed by producers working collaboratively with non-profit animal advocacy organizations, where retailers needs are integrated with concern about animal welfare, and where scientific research joins with on-farm wisdom. globalanimalpartnership.org/
Integrity Systems Company (ISC)	The Integrity Systems Company is a wholly owned subsidiary of Meat and Livestock Australia (MLA). ISC manages and delivers the Australian red meat industry's three key on-farm assurance and through-chain traceability programs. Home | Integrity Systems www.integritysystems.com.au/
International Committee for Animal Recording (ICAR)	ICAR is an International Non-Governmental Organization (INGO). The aims of ICAR are to promote the development and improvement of animal identification, performance recording and evaluation in farm animal production. They provide global standards for livestock data. www.icar.org
Livestock Production Assurance (LPA)	The on-farm assurance program that underpins market access for Australian red meat. LPA National Vendor Declarations (NVDs) provide evidence of livestock history and on-farm practices when transferring livestock through the value chain. www.integritysystems.com.au/on-farm-assurance/livestock-product-assurance/
Livestock Production Assurance On-Farm Quality Assurance (LPA QA)	The on-farm program that incorporates the Cattlecare and Flockcare programs, and represents the second tier of the LPA framework. www.integritysystems.com.au/on-farm-assurance/lpa-quality-assurance/
Meat & Livestock Australia (MLA)	MLA works in partnership with the red meat industry and the Australian Government to deliver marketing, research and development products and services to beef cattle, sheep and goat producers, with the core purpose of fostering the prosperity of the red meat industry. MLA is primarily funded by transaction levies paid on livestock sales by producers and are used to support marketing, research and development activities. MLA also receives matching funding from the Australian Government, unmatched grants and co-investment from other industry stakeholders. www.mla.com.au
Meat Standards Australia (MSA)	Eating Quality carcase grading used within the Australian red meat industry. Managed by Meat & Livestock Australia. www.mla.com.au/msa

National Livestock Reporting Service (NLRS)	Managed and operated by MLA to provide industry statistics and detailed reporting for major cattle markets including both physical and direct sales.
National Feedlot Accreditation Scheme (NFAS)	Independently audited quality assurance program for the Australian lotfeeding industry and is managed by AUS-MEAT through the Feedlot Industry Accreditation Committee (FLIAC). The sourcing of livestock from NFAS Accredited feedlots is a prerequisite for beef processed in AUS-MEAT Accredited Processing Establishments being marketed as Grain Fed (GF) or Grain Fed Young Beef (GFYG) or Grain Fed Finished (GFF). www.ausmeat.com.au/services/list/livestock/nfas/
National Saleyards Quality Assurance Program (NSQA)	Quality Assurance program for saleyards as part of the livestock sector. www.nsqa.com.au/
PCAS - Pasturefed Cattle Assurance System	An on-farm assurance program that supports raising claims relating to pasturefed or grassfed production methods. www.pcaspasturefed.com.au/
Red Meat Advisory Council (RMAC)	The Red Meat Advisory Council is a federation of Australian red meat and livestock national employer associations and commodity representative organisations. RMAC members are the prescribed Peak Industry Councils under the Australian Meat and Livestock Industry Act 1997. www.rmac.com.au/

Traceability

TERM	DESCRIPTION
Antibiotic free	Cattle have never been treated with antibiotics, including low level (prophylactic) or therapeutic level doses, sulphonamides, ionophores or coccidiostats whether through feed orwater, or by injection, from birth to slaughter.
Days on feed	Means the difference between the exit date and the entry date of feedlot cattle (including the date of entry but excluding the date of exit). Days on feed may form part of a market requirement
Ear tags	Plastic or metal tags applied to either ear. Visible, with identification details applied.
Ear tattoo	A permanent tattoo applied with tattoo pliers and a tattoo ink. May be applied in either ear.
Export Grazing Interval (EGI)	The minimum time between the application of a chemical to a crop or pasture that is continually grazed, and slaughter.
Export Slaughter Interval (ESI)	The minimum time that should elapse between administration of a veterinary chemical to animals and their slaughter for export.
Grainfed beef	Must meet the requirements of the National Feedlot Accreditation Scheme (NFAS). Used in Raising Claims and processor specifications. Described by the ciphers of: GF (Grainfed) GFYG (Grain Fed Young Beef) GFF (Grain Fed Finished)
HGP Free	Meaning never in their life received a Hormonal Growth Promotant (HGP) implant.
Induction	The practice of inducting the cattle into a feedlot. Can include identification of live animal traits and administration of health treatments.

Lifetime traceable	The animals' movements between properties/ land holdings is traceable since birth.
National Cattle Health Declaration	Cattle Heath Declarations are a way for producers to provide information about the health status of the cattle they are selling. Information includes vaccinations, health treatments and herd health history A legal document with the original page attached to the NVD for the consignment.Is not mandatory in all states. Find declarations at www.farmbiosecurity.com.au/
National Vendor Declaration	The declaration required when cattle are sold by any method. Managed by the Integrity Systems Company. Find National Vendor Declarations at www.integritysystems.com.au
Never Ever	Term used by processors to describe products sourced from cattle which meet their Never Ever criteria, meaning treatments and practices never used on the cattle consigned.
National Livestock Identification System (NLIS)	Australia's system for the identification and traceability of cattle, sheep and goats. www.nlis.com.au
NLIS device	NLIS accredited devices for cattle must be an electronic (RFID) device. This can be either a single ear tag, or a rumen bolus/visual ear tag combination. All cattle must be tagged with an NLIS accredited device before being moved off a PIC. www.nlis.com.au/NLISdocuments/Accredited%cattle%20devices
NLIS ear tag	The electronic identifier applied in the animal's right ear which contains the unique RFID identification number and the externally printed associated NLIS identification code which includes the PIC identification and individual ID numbers. White tags are for vendor bred cattle. Orange tags are for post-breeder cattle who have lost their NLIS device.
NLIS Rumen bolus	The electronic identifier which is orally inserted into the animal's stomach and which contains the unique RFID identification. The animal must be over 3 months of age. The animal is tagged with an ear tag (in the animal's right ear) which flags the presence of the rumen bolus (note some processors don't accept the use of rumen boluses).
Property Identification Code (PIC)	An eight-character code allocated by the Department of Agriculture or an equivalent authority in each state or territory to identify a livestock-producing property.
Pre-sale catalogue	The listing of all the livestock to be sold at a sale and which is a summary of the NVD information supplied by each vendor. Available from selling agents or the saleyard administration office.
Property of birth	The property/ land holding on which the animal was born
Property of origin	The property/land holding from which the animal was being moved from
Raising Claims	An Animal Raising Claim is a claim made in the Trade Description or export documentation about the animal or supply chain specifically relating to Animal Husbandry conditions, feeding, handling, drug treatments and/or geographical references. www.ausmeat.com.au/WebDocuments/Animal_Raising_Claims_Framework_for_Beef_Production_in_Australia.pdf
Radio Frequency Identification Device (RFID)	The National Livestock Identification System (NLIS) requires cattle to be identified with a Radio Frequency Identification Device (RFID), either an ear tag or a rumen bolus/ear tag combination, so that animals can be traced from property of birth to slaughter. The RFID microchip inside the device is read by a hand-held scanner or panel reader and is associated with the externally printed NLIS identification.

Stock travelling permits	Permit issued to allow the movement of stock on stock routes, along roads and by vehicle between two stated locations. Available from State/ Territory Agencies.
Tail tag	Tail tags are a short term identifying device used in marketing, They are a plastic tag around the cow's tail.
Traceable once removed	The animals' movements are traceable from the property/PIC they are currently on back to the property of origin.
Waybill	When transporting livestock, a waybill is required by law in all States except Victoria. The National Vendor Declaration can fulfill this requirement with the exception of the NT that only accepts the NT waybill as its mandatory movement document.
Withholding period (WHP)	The minimum period which must elapse between last administration or application of a veterinary chemical product, including treated feed, and the slaughter, collection, harvesting or use of the animal commodity for human consumption. WHPs are mandatory for domestic slaughter and are on the label of every registered product.

Sex

TERM	DESCRIPTION
Bobby calf	A calf not accompanied by its dam, less than 30 days old, weighing less than 80kg live weight, and usually a dairy breed or dairy cross.
Bull	Entire Male bovine or castrated male bovine with secondary sexual characteristics aged 24 months of age and older.
Bull calf	Male bovine, not castrated and not more than 12 months of age.
Castration	The removal or disruption of the function of the testes by excision, or by constriction and / or crushing of the testicular blood supply (using a rubber ring, tension band or burdizzo clamp) Also known as marking.
Cow	Female bovine which has calved or is over 30 months.
Cryptorchid	Male cattle where there is an absence of one or both testes in the scrotum.
Freemartin	A female born as a twin to a bull calf. Infertile.
Heifer	Female bovine that has not yet calved and is under 30 months.
Heifer calf	Female bovine aged not more than 12 months of age. Also meaning: Weaner heifer.
Hemi castrate	Male bovine which has been castrated by removing one testicle and surgically removing the tail of the epididymis from the remaining testicle.
Milk fed vealer (MSA)	A female or male bovine, still sucking, which has been sent direct to consignment for processing and presented for MSA grading.
Primary Sexual Characteristics (PSC)	Determined by assessing the live animal and show the development of genitalia of one or more of the following, testicles, sheath, prepuce, penis and/or development of muscles in the neck and shoulder region.
Rosé veal	Specifically fed veal that have been fed in an Accredited Rosé Veal feeding facility for not less than 150 days.
Secondary Sexual Characteristics (SSC)	Determined by assessing the live animal or carcase and show the following: The advanced development of muscles in the neck and shoulder region, a prominent penis stub, well developed scrotum with relatively scarce scrotal fat, well developed inguinal canal.

Spayed cow	A female bovine which is over 30 months of age and has had the ovaries removed.
Spayed heifer	Female bovine not more than 30 months of age, which has had the ovaries removed.
Stag	Male bovine with one intact testicle, and/or shows secondary sexual characteristics.
Steer	Male bovine, castrated, aged 24 months and older.
Steer calf	Male bovine, castrated, and not more than 12 months of age.
Veal	A female or male bovine which: 1. has no evidence of eruption of permanent incisor teeth 2. Hot Standard Carcase Weight of no more than 150 kg
Weaner	Animal presented without mother or non-suckling
Yearling bull	Entire Male bovine, greater than 12 months and not more than 23 months of age.
Yearling heifer	Female bovine greater than 12 months and not more than 23 months of age.
Yearling steer	Male bovine, castrated, greater than 12 months and not more than 23 months of age.

Age

TERM	DESCRIPTION
Year code	The Australian coding for year of birth, as an age prefix, may be used to precede a numeral number(s) which identify the actual animal.
Year of drop	A brand to identify the year of branding in the extensive pastoral regions. Recognised as not being a reliable indicator of actual age.
	Terms to be discontinued
Mickey	Bulls that remain entire but are not intended to be used for breeding .
Rising 2 Years	Meaning an animal of either sex that is between 19 months to 24 months of age. Common term confounded by the lack of age description when used. Recommend to discontinue.

Breed

TERM	DESCRIPTION
Australian Breeding Values - ABV **ABVg**	Estimate of an animals' genetic merit for a particular trait used for dairy cattle An ABV where the animal's DNA is combined in the calculation with the pedigree to derive the ABV.
Base values	The base data set of a reference year that may be periodically changed by the genetic evaluation provider, such as BREEDPLAN or IGS.
Bos	The genus name of all cattle.
Bos indicus	Bos indicus cattle, also referred to as tropical cattle, are derived from Asia and Africa and are distinguished by their hump, loose skin, fine hair and floppy ears. They are more suited to tropical conditions due to their insect, heat and parasite resistance and as such are found predominately in the northern areas of Australia.
Bos taurus	The classification of cattle that are often referred to as European or British breeds. They prefer more temperate climates and are mostly found in the southern regions of Australia. They have thicker coats to weather cooler winters and do not have a notable hump.

Bovine	A description of animals in the Bos genus.
Breedplan	The national beef performance recording program for purebred / hybrid cattle in Australia.
British breed	Cattle within Bos taurus but differing from European breed types.
Composite (breed)	A breed formed by mating the progeny of two or more existing breeds for more than 1 generation.
Cross bred	Where the animal is bred from joining at least two different breeds.
Dam	Female parent of a calf or potential calf.
DataGene	An independent and industry-owned organisation that is responsible for driving genetic gain and herd improvement in the Australian dairy industry.
Estimated Breeding Value (EBV)	Estimate of an animals' genetic merit for a particular trait and an indication of how an animal's progeny will perform.
Estimated Progeny Difference (EPD)	An estimation of the genetic value that an animal will pass on to its progeny.
Euro	Common language description for cattle of European breed, also bos taurus but differentiated from British breeds.
Full blood	A term used by Wagyu breeders for cattle bred on original Japanese seedstock and fully traceable.
Genomic Estimated Breeding Value - (gEBV)	Meaning an EBV where the beef animals DNA is used in the calculation to derive the EBV. The abbreviation "g" means genomic.
International Genetic Solutions (IGS)	A genetic evaluation method to predict genetic merit as Estimated Progeny Difference using large genomic inputs in the calculations.
MSA Index	A number between 30 to 80, expressed to 2 decimal places (ie 54.62), to represent the eating quality potential of a whole carcase. The MSA index is independent of any processing inputs and is calculated using only attributes influenced by pre-slaughter production.
Pure bred	Both parents are of one known individual breed. May be declared by breeding records or as registered cattle (Breed Society). May be bred up from crossbred cattle for 4 generations.
Research Breeding Value (RBV)	Research Breeding Values are Estimated Breeding Values under development.
Sanga	The collective name of indigenous cattle originating in sub Saharan Africa.
Sire	Male parent of a calf or potential calf.
Terminal sire	A sire whose progeny are all sold for slaughter.
Trait	Meaning an attribute expressed by a gene or multiple genes and/or influenced by environment.
Tropical breed content	Describes the proportion of topical adaptation in an animal. Has been replaced in MSA grading by the direct measurement of hump height.

Dentition

TERM	DESCRIPTION
Broken mouth	Meaning the incisor teeth of the bottom jaw are loose, partly missing or worn down. Used to assess cows to determine the risk to them from reduced pasture intake, and for culling assessment.
Dentition	Meaning the number of permanent incisor teeth visible on the lower jaw. Not an accurate predictor of age and not recommended as an age descriptor. When required in a market specification follow the AUS-MEAT method.
Permanent incisor teeth	A new incisor that has broken (erupted) through the gum surface.
Mouthing	The visual inspection of the incisor teeth of the bottom jaw. May be used if a market specifies dentition. Used to assess the incisor teeth for their ability to bite pasture.

Weight (live, carcase, dressing %)

TERM	DESCRIPTION
Average Daily Gain	Calculated as the difference in live weight between two dates and divided by the number of days between those dates. Best calculated on a full weight basis.
B- Double	Consists of a prime mover and two trailers (joined together by a B coupling) where the first trailer is known as the 'A ' trailer and the second trailer the 'B 'trailer. May be single or double deck. For further dimensions refer to www.atatruck.net.au
Body truck	The chassis of the truck supports a single floor (deck) cattle crate mounted either to the chassis of the truck or to the floor of the truck. For further dimensions refer to www.atatruck.net.au
Bruise score	A bruise score is assigned to an individual carcase to describe a bruise and resulting in meat or cuts being downgraded or trimmed out. The bruise score also denotes a carcase position.
Curfew off feed	Means the number of hours since consuming feed Transporters may request 2 to 3 hours to reduce transit manure. All cattle are kept on water until transport.
Dressing percentage (%)	Dressing percentage simply states the relationship between the carcase weight and the estimated or known live weight. Dressing percentage is not a measure of carcase merit or carcase yield. The calculation for Dressing Percentage is: (hot standard carcase weight ÷ live weight) × 100.
Dry curfew	The withdrawal of feed and water before another procedure, such as weighing, leading to transport. This dry period is included in the total water-deprivation time. This dry period is not part of a spell.
Eye Muscle Area (EMA)	Area of the surface of the M.longissimus dorsi at the ribbing site and is measured in square centimetres.
Eating Quality Graded (EQG)	The EQG cipher is an alternative non-dentition based AUS-MEAT category cipher and is used on a voluntary basis where cuts have met Meat Standards Australia eating quality requirements.
Fat colour	Fat colour is the colour of intermuscular fat lateral to the rib eye muscle. It is assessed on chilled beef carcases using AUS-MEAT Reference Standards from 0-9.
Gut shrinkage	Means the % of an animal's live weight which it will lose (as the digestive system converts the contents to energy and protein sources for the animal and undigested contents to manure) over the number of hours feed is not ingested.

Standard Carcase trim	The maximum carcase trim allowed prior to weighing the carcase for hot weight as defined by AUS-MEAT.
Hot Standard Carcase Weight (HSCW)	Measured in kilograms as the weight of a carcase once the live animal has been slaughtered, and dressed according to AUS-MEAT Standard Carcase trim.
Hump height	Meaning the height of the hump (rhomboideus muscle) measured in 5 mm increments from the Ligamentum nuchea muscle to the highest point of the hump. Measured on all carcases presented for MSA grading.
Intramuscular fat (IMF)	Intramuscular fat (IMF), often known as marbling, is the distribution of fat within muscle. Intramuscular fat has a strong influence on eating quality. IMF is predominantly influenced by management and genetics.
Lean Meat Yield (LMY)	Lean meat yield (LMY) is the weight of lean meat tissue (excluding bone and fat) in a carcase, divided by the total weight of the carcase. It is generally expressed as a percentage (LMY%).
Live weight	Measured on metric scales only and in one kilogram increments for individual animal weights.
Live weight (empty)	The live weight taken after mustering and qualified by stating the time off feed, often referred to as a curfew period. May or may not have access to water during yarded pre-weighing period.
Live weight (full)	The live weight (kg) of the animal recorded after a pre-determined feed curfew stated in hours, that includes transport journey time and mustering time.
Marbling	Marbling is the intramuscular fat (IMF) within the muscle and between the muscle fibres which appears as fine flecks of fat within a muscle. It is assessed on chilled beef carcases. There are two marbling measurements using in Australia. The AUS-MEAT Marbling scores range from 0 -9 and provide an indication of the amount of marbling in beef. The MSA Marbling scoring system ranges from 100- 1190 and provides an indication of the amount, fineness of distribution and the size of marbling pieces.
Meat colour	Meat colour is the predominant colour of the rib eye muscle. It is assessed on chilled beef carcases using AUS-MEAT Reference Standards from 1A – 7, and is measured on the rib eye muscle area.
Non-compliant	When cattle or carcases do not meet the specifications which they were consigned to comply with.
Ossification	Ossification score is a measure of physiological maturity of the beef carcase through bone development in the vertebrae. It is scored on a range of 100 - 590 and is used in the Meat Standards Australia grading system as a predictor of eating quality.
P8 site	The anatomical site where fat depth is measured. The P8 site is defined as the point at the intersection of two lines: one line extends down the side of the animal from the crest of the third sacral vertebrae and the other line extends parallel to the backbone along the side of the animal starting from the pin bone. P8 and other subcutaneous fat depths may be measured using objective measurement technologies.
Road train	Consists of a prime mover and at least two independent trailers which for cattle transport may be built as single or double deck. For dimensions refer to www.atatruck.net.au
Saleable meat yield (SMY)	SMY% is the weight of saleable product, as sold to consumers in the form of retail cuts, divided by the total weight of the carcase, expressed as a percentage.
Semi-trailer	Consists of a prime mover with a single trailer (single or double deck) cattle crate. For dimensions refer to www.atatruck.net.au

Time off water	The period of time for which livestock do not have reasonable access to water during the handling or transport processes. Commences with the start time for mustering and concludes with a time mid-way through the actual weighing activity.
Transit Weight Loss	The difference between a live weight recorded before loading (on property or saleyard) and the weight recorded after arrival at the destination (feedlot/ live export quarantine/ or property). May be determined by individual weights or truck trailer weights. Expressed as percentage of the pre-loading recorded weight.
Transport Compartment Density	The number of cattle recommended to be loaded in each compartment.
Truck compartment	The segregation compartment on a deck usually 3m or 6m in length.
Value based payment	A payment for the carcase based on a traits that a processor defines as value which may include eating quality results, yield or other factors.
Yield	The proportion of the kilograms of retail cuts derived from the kilograms of total carcase (HSCW) when external fat is trimmed to a defined measure (mm). In relation to a live animal it may be calculated to a live weight, may also be referred to as red meat yield. Does not represent dressing percentage.
Terms to be discontinued	
Weight for Age	Subjective term. Attempts to describe kg of weight relative to months of age.
Carcase Quality Grade, including terms: **Highest Quality 1st (HQ1)** **Good Average Quality (GAQ) first grade** **Fair Average Quality (FAQ) second grade** **Third Grade Manufacturing (3MX) third grade** **Canner (CNR)**	All terms referring to carcase quality grade to be replaced by MSA grading credentials, including use of the EQG cipher

Fat score

TERM	DESCRIPTION
Fat score	A score of 0-6 based on visual assessment at defined skeletal points of the body. It is an assessment of subcutaneous fat without any assessment for muscle.
Terms to be discontinued	
Body Condition Score (BCS)	Body Condition Score is a term that combines assessment of subcutaneous fat and muscle, to visually assess for 'animal condition' Fat score and muscle score as independent objective assessments are recommended to be used in place of a body condition score.
Forward to prime store **Forward store** **Backward store** **Prime**	Subjective term that is not defined Replaced by fat score and muscle score and assessment to meet a market's specifications.

Muscle score

TERM	DESCRIPTION
Jump muscle	The Gluteus group of muscles overlaying the Ilium (hip or hook bone), is visible as convex in shape.
Muscle score	Muscle score is an independent assessment of muscularity without any assessment for fat. A descending score from A to E based on visual assessment at defined skeletal points of the body.

Physical descriptions (frame size, maturity, horns,eye, temperament, structure)

TERM	DESCRIPTION
Crush score	Meaning an objective assessment system which scores cattle from their behaviour when constrained in a crush. Developed by Dr Temple Grandin.
Eye pigment	Means the presence of non-white colour on the eyelids. Not to be confused with the presence of coloured hair around the eye socket.
Feeder (Steer or Heifer)	An animal which is managed to suit the specifications for entry into a feedlot.
Finished	When an animal complies with the specifications for a particular market.
Flight distance	The estimated distance (metres) at which cattle will move away from an approaching person, vehicle, horse, motor bike as their sense of safety is broken. Can be assessed in the paddock and in the cattle yards. Affected by temperament.
Flight time	Meaning the measured time that an animal passes between two points as it leaves the cattle crush or race exit. Used to assess temperament.
Frame score	A numerical score based on age and height where age is known in months. Backbone height is measured above the hook joints.
Frame size	A numerical score based on age and height where age is known in months. Backbone height is measured above the hook joints.
Hip height	Height = Crush height – difference (between top of crush and height of animal backbone measured above the hook joint).
Hooded eye	Means the top of the skull at the eye socket protrudes over the eye lid and eye – ball.
Horns	Cattle horns arise from subcutaneous connective tissue (under the scalp) and later fuse to the underlying frontal bone.
Maturity type	Maturity type or growth potential is a way of describing the skeletal size of cattle. Frame score, which is the height of a beef animal at a given age can be used as a measure of its maturity type.
Near side	Meaning the animals left side.
Off side	Meaning the animals right side.
Phenotype	Meaning any observable (external or internal) characteristic of an animal resulting from the interaction of its genotype with its environment.
Structural soundness	A series of physical assessments which score the animals physical features which affect the ability to perform the actions of walking / mobility, joining or lactation.
Temperament	The term ‘Temperament’ is used to describe the behaviour of all cattle in response to an environment, stimuli or situation.
Temperament score	A 1-5 scoring system based on observed behaviour.

Terms to be discontinued	
Cracker	Subjective term for structurally unsound cows or bulls. Replaced by Fat Score, Muscle Score, Welfare Score and structural assessment. score.
Docility	Meaning compliant, obedient, easy to influence. It is proposed to replace this with the term temperament.

Reproduction

TERM	DESCRIPTION
Anoestrus	The period of time from calving to ovulation (first standing heat) beyond 30 days.
Artificial insemination (AI)	Depositing semen into the reproductive tract of the cow/heifer.
B – mode ultrasound	The ultrasonographic method considered to be the most accurate for pregnancy diagnosis and foetal aging in bovines.
Calving ease	Calving ease describes the degree of intervention/ assistance provided to the dam to expel the calf.
Controlled joining	A period of joining between two calendar dates, usually over 3 or 4 oestrus cycles.
Embryo transplant (ET)	Implantation of an embryo into the uterus of the cow/ heifer.
Foetal aging	Use of B – mode Ultrasound to measure foetal skeletal growth to estimate the days of age of the foetus.
In vitro fertilisation (IVF)	Retrieving follicles to harvest ova for laboratory fertilisation.
Joined	Female cattle have been running together with bulls or artificially inseminated.
Joining	The period of: - Days or months the bulls and cows have run together - Artificial insemination
Multi- sire	More than one bull per group of cows at any one time.
Not detectably pregnant (NDP)	Meaning that no pregnancy or pregnancy more than 5 weeks in calf can be detected by either manual palpation (animal has palpably normal reproductive tract), B-mode ultra-sound or blood test methods of pregnancy diagnosis. This term is used in conjunction with the ACV PREgCHECK® program.
Not pregnant	Meaning that no pregnancy can be determined by any of the pregnancy diagnosis methods or not more than 8 weeks in calf and/or not knowingly mated (joined).
Oestrus cycle	The reproductive cycle of female cattle from the time of one period of heat (oestrus) to the next period of heat and which is accepted to be of 21 days duration [18 to 24-day range].
PREgCHECK®	Pregnancy test service offered by Australian Cattle Veterinarians through accredited veterinarians.
Pregnancy diagnosis	The detection of pregnancy status by: 1. rectal manual palpation 2. rectal ultra-sound (B- Mode) 3. blood testing 4. milk Testing

Pregnancy tested in calf (PTIC)	Meaning that a pregnancy can be detected (foetus) by any of the pregnancy diagnosis methods. A signed statement of pregnancy should be made available for any terms of trade purpose. The signing of a Statement of Pregnancy must adhere to the Regulations which apply in the State or Territory the cattle are located at the time of the diagnosis.
Restricted joining	A period of joining between two calendar dates, usually over 3 or 4 oestrus cycles.
Serving ability	This is a physical observation of a bulls demonstrated ability to serve to identify any structural or reproductive abnormalities. The 'test' must be supervised by a licensed veterinarian who is a member of the Australian Cattle Veterinarians (ACV).
Sexed semen	Semen 'sorted' to have X (male) or Y (female) chromosomes to produce progeny of the desired sex either male or female.
Single sire	One bull per group of cows at any one time.
Unjoined	Meaning not known to be mated.
Terms to be discontinued	
Breeding Quality	Subjective term. Includes the terms: Excellent, Very Good, Good, Fair .
Not Station Mated	Replaced by the terms 'unjoined' and 'not known to be mated'.
Station Mated	Replace by the term "joined".

Livestock Treatments and husbandry practices

TERM	DESCRIPTION
Beta agonists	A class of non-hormonal compounds fed to cattle. Not currently registered for use in Australian beef production.
Branding	Branding is the placement of a permanent identifying mark on the hide of an animal by destroying the hair follicles and altering hair regrowth. The intent is to provide permanent and visible identification, and assists in establishing ownership of an animal.
Dehorning	The process of removing or stopping the growth of horns in livestock.
Disbudding	The process of removing or stopping the growth of horns in livestock.
Drafting	The separation of stock based on their gender, live weight or any reason/purpose
Drenching	The treatment of animals to control internal parasites (worms) by either injection, orally or topically (on the skin).
Earmarking	The removal by cutting of a registered, shaped portion of the ear with earmarking pliers. used to identify livestock.
Ear notching	The removal by cutting of a registered, shaped portion of the ear with earmarking pliers. used to identify livestock.
Ear tagging	A visible tag attached to the ear used to identify livestock. Ear tagging is an essential part of the National Livestock Identification System (NLIS).
Ear tattooing	A permanent imprint made inside the ear and used to identify livestock.

HGP - Hormonal Growth Promotant	HGPs are a veterinary medicine product, registered in Australia to increase the growth or productivity of livestock through an oestrogenic, androgenic, gestagenic or thyrostatic effect. HGPs come in the form of implants placed under the skin on the back of the ear of cattle, continuously releasing low doses of hormones.
HGP earmark	At the time of HGP application cattle must be identified with a triangular ear mark which is applied in the middle of the animals left ear.
Spaying	The removal of the ovaries by excision, or disruption of the function of the ovaries by removal of part of the fallopian tubes.
Tail docking	Removal of the tail. Tail docking is illegal in Queensland unless necessary for the animals welfare and conducted by a veterinarian. In other states and territories the Code of Practice for the Welfare of Animals - Cattle 1993 is an advisory code approved (but not mandatory) under the Act. The Code provides that tail docking should be performed only where necessary for udder health or when otherwise prescribed by a veterinarian. Individual state or territory legislation should be consulted.
Vaccination	The injection of vaccines which minimise the risk of diseases such as Clostridial, Respiratory or, Reproductive diseases.
Weaning	Removal of the calf from the dam or from milk feeding. In beef production generally from 3 to 9 months of age.

Hides and coats

TERM	DESCRIPTION
Buffalo fly	The buffalo fly, is a small biting fly 3.5 – 4 mm long. Buffalo fly irritate cattle, interrupt feeding and cause lesions, especially when infestations are high.
Cattle tick	The cattle tick, Rhipicephalus microplus, affects primarily cattle but can also infest other species. It is responsible for transmitting three blood-borne tick fever organisms.
Coat	Refers to the hair on the skin of cattle. Variation exists in coat type between animals, and a proportion of this variation is due to genetic differences.
Coat colour	The coat hair colour with the predominant observed colour is stated first. Not to be confused with skin pigment colour.
Coat score	A measure of adaptability of animals to different production environments.
Dags	Accumulation of faecal and soil particles that adhere to hair in the coats of cattle. They are formed when manure, dirt and hair are bound together.
Hide	The natural skin of cattle. Physical marks can be observed on the skin of the animal.
Ringworm	Ringworm is a skin lesion, usually circular and hairless, caused by a fungal infection of the hair follicle and outer layer of skin. Trichophyton verrucosum is the principal agent affecting cattle.

Welfare

TERM	DESCRIPTION
Animal welfare	The state of an animal and how well it is coping with the conditions in which it lives.
Emaciated	Defined as an animal classified as High Risk 2 in animal welfare assessment. As described in measurement terms in animal welfare assessment Section 14.
Fit to Load	Guidelines that determine if individual animals are fit to be loaded for transport and for the entire journey by road. www.mla.com.au/isitfittoload
Land Transport of Livestock Standards and Guidelines	The Australian Animal Welfare Standards and Guidelines — Land Transport of Livestock are nationally agreed animal welfare standards and guidelines were developed cooperatively by the livestock industries and government, under the Australian Animal Welfare Strategy (AAWS). They cover the transport of livestock by road and rail, and by livestock transport vehicles aboard a ship.
Stress	A response by animals that activates their behavioural, physiological or psychological coping mechanisms.

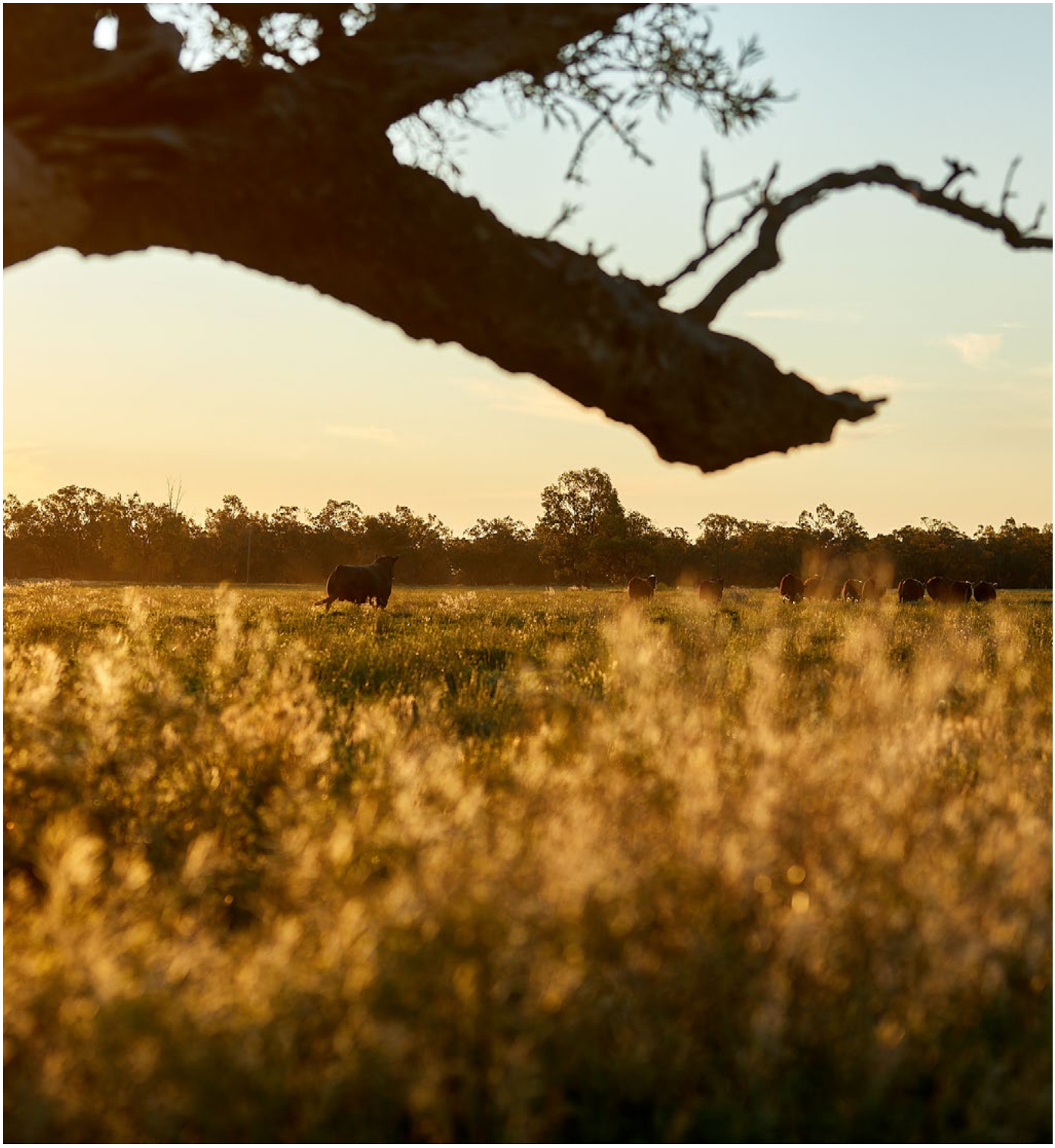
NATIONAL BOVINE LIVESTOCK LANGUAGE GUIDELINES SUPPLEMENT

INTRODUCTION

Purpose

The purpose of the Supplement to the National Bovine Livestock Language Guidelines is to provide additional information supporting identified areas of the Language. This information expands upon these areas to provide further guidance on the use of the Language.

The Language Guidelines have been developed with the intent of implementing terms that describe livestock traits that can be measured. Where terms are deemed subjective, colloquial or hard to define, they have been recommended to be discontinued in the glossary.



CONTENTS

1. SEX

LIVESTOCK LANGUAGE GUIDELINE 3
1.1 CLASSIFICATION OF BULL

The Livestock Language Guidelines provide clear definition of male cattle terms, and primary and secondary sexual characteristics.

It should be noted that upon processing of these animals, the AUS-MEAT Language has provision for entire and castrated males to be classified within the following basic and alternative beef categories based on the dentition assessment of the animal and evidence or lack of evidence of secondary sexual characteristics:

- Bull *B*
- Beef *A*
- Yearling Steer *YS*
- Yearling Beef *Y*
- Young Steer *YS*
- Young Beef *YG*
- Young Prime Steer *YPS*
- Young Prime Beef *YP*
- Prime Steer *PRS*
- Prime Beef *PR*
- Steer *SS*

Entire males, regardless of presence of SSC's are not currently eligible for the Meat Standards Australia eating quality program.

Further information

2020. AUS-MEAT Handbook of Australian Meat - International Red Meat Manual 8th ed. Brisbane: AUS-MEAT Ltd.

2. DENTITION

LIVESTOCK LANGUAGE GUIDELINE 6

The Livestock Language clearly defines the purpose of assessing dentition in the live animal as being linked to the AUS-MEAT Language, and is not a method to accurately measure chronological age, maturity or eating quality, given eruption of incisor teeth in cattle is not determined by the animals actual chronological age.

Figure 1 illustrates the carcase classification categories and the associated dentition assessment. These diagrams can also be used to inform live animal assessment for the purposes of on-farm animal management.

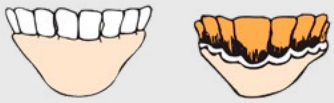
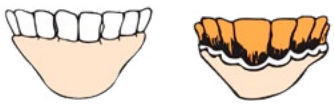
It is noted that dentition is currently included in some trading terms and market specifications, including:

- European Union Quotas (Grain Fed: EU 481/2012 & Hilton Quota: EU 593/2013)
- Chile (VCUNO) Classification system
- Japan – LT30 requirements (Bone in Short Loin products)
- Canada – Recognition of AUS-MEAT Classification system and Basic / Alternative Category Ciphers
- United States Department of Agriculture (USDA) has a LT30 Export Verification program for 30 months of Age
- New South Wales Food Authority Domestic Beef Labelling

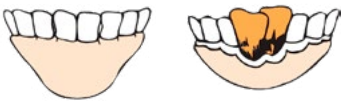
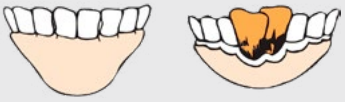
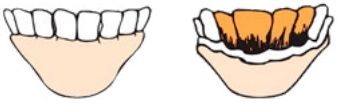
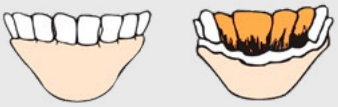
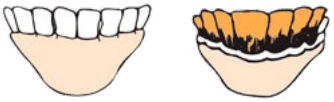
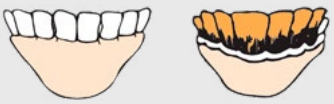
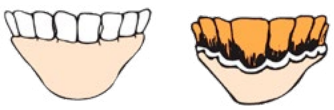
Further information

2020. AUS-MEAT Handbook of Australian Meat - International Red Meat Manual 8th ed. Brisbane: AUS-MEAT Ltd.

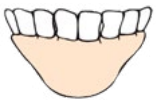
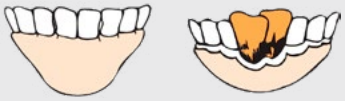
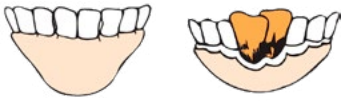
BASIC CATEGORIES (VEAL / BEEF / BULL)

DENTITION	DESCRIPTION	CATEGORY / CIPHER
0 	**VEAL - Female or castrate or entire male** bovine that: • Has no evidence of eruption of permanent incisor teeth • Weighs no more than 150kg (HSCW) • In males shows no evidence of SSC • Shows youthfulness and veal colour (Veal meat colour must not exceed the AUS-MEAT veal colour standard V5)	**VEAL *V*** **see over for optional veal classes**
0 - 8 	**BEEF - Female or castrate or entire male** bovine that: • In males shows no evidence of SSC • Dentition range for this category is 0 to 8 permanent incisor teeth • Primal cuts from veal carcases weighing 70.1-150kg (HSCW) can be included in this category	**BEEF *A*** **or** **BEEF**
0 - 8 	**BULL- Derived from entire or castrate male** bovine showing SSC **BULL & BEEF - A combination pack** containing mixed product derived from Categories Bull *B* and Beef *A* must be described as **BULL and BEEF** or with the cipher ***BA***	**BULL *B*** **BULL & BEEF *BA***

ALTERNATIVE CATEGORIES (BEEF)

DENTITION	DESCRIPTION	CATEGORY / CIPHER
0 	Carcase is derived from **castrate or entire male** bovine that: • Has 0 permanent incisor teeth • Has no evidence of Secondary Sexual Characteristics (SSC)	**YEARLING STEER *YS***
0 	Carcase is derived from **female, castrate or entire male** bovine that: • Has 0 permanent incisor teeth • Has no evidence of Secondary Sexual Characteristics (SSC)	**YEARLING BEEF *Y***
0 - 2 	Carcase is derived from **castrate or entire male** bovine that: • Has no more than two (2) permanent incisor teeth • Has no evidence of Secondary Sexual Characteristics (SSC)	**YOUNG STEER *YGS***
0 - 2 	Carcase is derived from **female, castrate or entire male** bovine that: • Has no more than two (2) permanent incisor teeth • Has no evidence of Secondary Sexual Characteristics (SSC)	**YOUNG BEEF *YG***
0 - 4 	Carcase is derived from **castrate or entire male** bovine that: • Has no more than four (4) permanent incisor teeth • Has no evidence of Secondary Sexual Characteristics (SSC)	**YOUNG PRIME STEER *YPS***
0 - 4 	Carcase is derived from **female, castrate or entire male** bovine that: • Has no more than four (4) permanent incisor teeth • Has no evidence of Secondary Sexual Characteristics (SSC)	**YOUNG PRIME BEEF *YP***
0 - 7 	Carcase is derived from **castrate or entire male** bovine that: • Has no more than seven (7) permanent incisor teeth • Has no evidence of Secondary Sexual Characteristics (SSC)	**PRIME STEER *PRS***
0 - 7 	Carcase is derived from **female, castrate or entire male** bovine that: • Has no more than seven (7) permanent incisor teeth • Has no evidence of Secondary Sexual Characteristics (SSC)	**PRIME BEEF *PR***
0 - 7 	OX - Carcase is derived from **female (only)** bovine that: • Has no more than seven (7) permanent incisor teeth	**OX *S***
0 - 8 	STEER - Carcase is derived from **castrate or entire male** bovine that: • Has up to eight (8) permanent incisor teeth • Has no evidence of Secondary Sexual Characteristics (SSC) (Note product from this category may be included in the *S* OX category)	**STEER *SS***
0 - 8 	Cow - Carcase is derived from **female** bovine that: • Has eight (8) permanent incisor teeth	**COW *C***

ALTERNATIVE CATEGORIES (BULL)

DENTITION	DESCRIPTION	CATEGORY / CIPHER
0 	Carcase is derived from **entire male** not assessed for SSC: • Has no evidence of eruption of permanent incisor teeth • Carcase weighs more than 150kg *(HSCW)	**YEARLING ENTIRE** ***YE***
0 - 2 	Carcase is derived from **entire mal**e not assessed for SSC: • Has no evidence of eruption of more than two (2) permanent incisor teeth • Carcase weighs more than 150kg *(HSCW)	**YOUNG ENTIRE** ***YGE***
0 - 2 	Carcase is derived from **castrate or entire male** bovine that: • Has no evidence of eruption of more than two (2) permanent incisor teeth • Shows signs of Secondary Sexual Characteristics (SSC) • Carcase weighs more than 150kg *(HSCW)	**YOUNG BULL** ***BYG***

3. DRESSING PERCENTAGE

LIVESTOCK LANGUAGE GUIDELINE 7.3

To aid in estimating dressing percentage, additional information is provided here.

As cattle are held off pasture or feedlot diets, and water, their live weight will decrease as the intestinal tract processes the rumen contents and absorbs water, excreting urine and passing manure.

The table below provides estimates of live weight loss and related change to dressing percentage. It should be noted however that actual losses will vary widely.

TIME OFF FEED/ WATER	PERCENTAGE LIVEWEIGHT LOSS	INCREASED DRESSING PERCENTAGE
1 HOUR	1.5%	0.75%
2 HOURS	2.5%	1.25%
4 HOURS	4%	2%
12 HOURS	7%	3.5%
16 HOURS	8%	4+%

Source: Dressing percentages for cattle (nsw.gov.au)

The cattle industry has adopted percentage weight loss estimates for gut fill as a method of comparing price offered by buying/selling systems where gut fill weight is not considered to be a component of the animal's live weight.

The curfew time prior to weighing is often stated to assist buyers adjust for "shrink". Shrink is described as the percentage of live weight loss:

a. that can be measured from a live weight recorded previously

b. that can be applied to a known liveweight with the purpose of adjusting the weight or the price (cents per kg) to account for the "gut fill" component of the liveweight.

Allowing for the effect of diet

It should be noted that highly digestible feeds (such as processed grain and green forage crops/green pasture) are digested more quickly than hay and silage where the cellulose content of the fodder is higher and the water content lower.

Impact on Dressing Percentage

The gut fill component of an animals liveweight has an effect on dressing percentage. The less weight of rumen contents then the higher the proportion of actual carcase weight.

Estimating Carcase Weight

Carcase weight can be estimated by multiplying liveweight by dressing percentage.

REFERENCES

McKiernan, B., Gaden, B. and Sundstrom, B., 2007. Dressing percentages for cattle. NSW Department of Primary Industries Primefacts, [online] Primefact 340. Available at: <www.dpi.nsw.gov.au/__data/assets/pdf_file/0006/103992/dressing-percentages-for-cattle.pdf>

4. FAT SCORE

LIVESTOCK LANGUAGE GUIDELINE 8

To support the fat score assessment as defined in the Livestock Language Guidelines, a series of diagrams of fat score by genotype are provided. The diagrams provided show how to assess fat scores 1 to 6 for three genotypes of cattle:

a) British / European breeds and crosses

b) Tropical Composite breeds and crosses

c) High Grade Brahman.

The Livestock Language has provided a definitive 0-6 scoring system, using whole numbers. Whole scores allow for a simple consistent method of live animal description across the industry sectors.

The whole scores have clear delineation between each score step, based on skeletal reference points. It would be difficult to clearly define half-score increments.

Breed Societies who require a 12 point system may develop half scores based on the 0 to 6 Fat Score method and it is recommended that the proposed half scores be submitted through Australian Registered Cattle Breeders Association (ARCBA) to the Language Technical Group for review and comment.

The Livestock Language Guidelines do not provide methodology to determine half scores. Whilst it is recognised the half scores may be applied in industry use, it is noted that objective assessment criteria are not defined.

REFERENCES

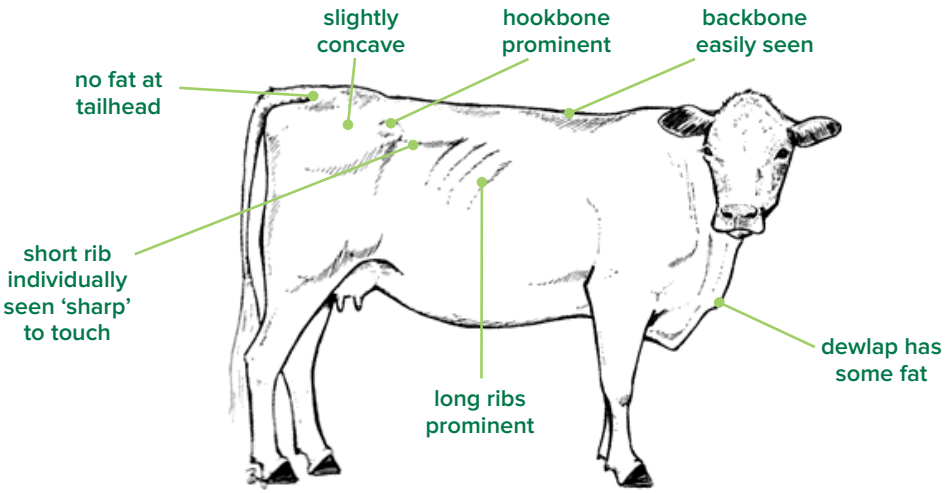
Blackwood, I., Exton, S., Littler, B. and Siddell, J., 2013. A national guide to describing and managing beef cattle in low body condition. 1st ed. North Sydney: Meat and Livestock Australia.

Figure 1. Fat score assessment sites for British/European breeds and crosses

A) British / European breeds and crosses

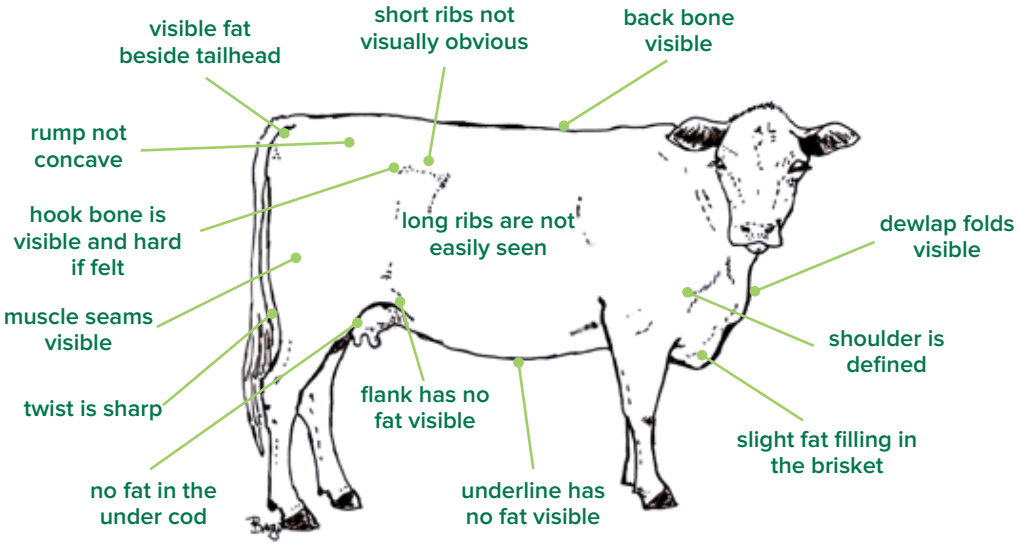
Fat Score 1

Muscle Score B -E [Lowest Management Score and animal At Risk]



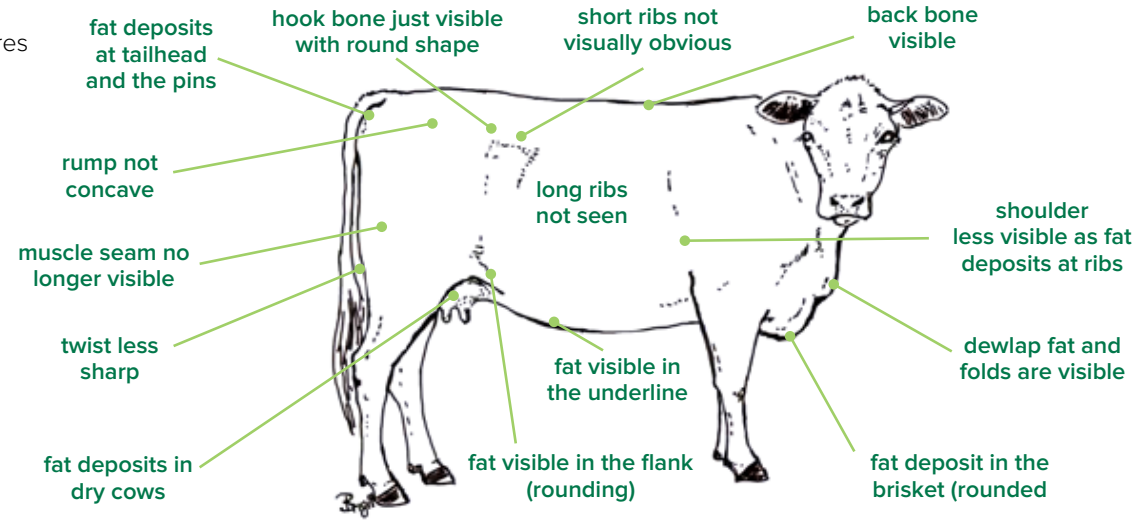
Fat Score 2

skeletal features are visible. The animal is strong and healthy with evidence of muscle wastage



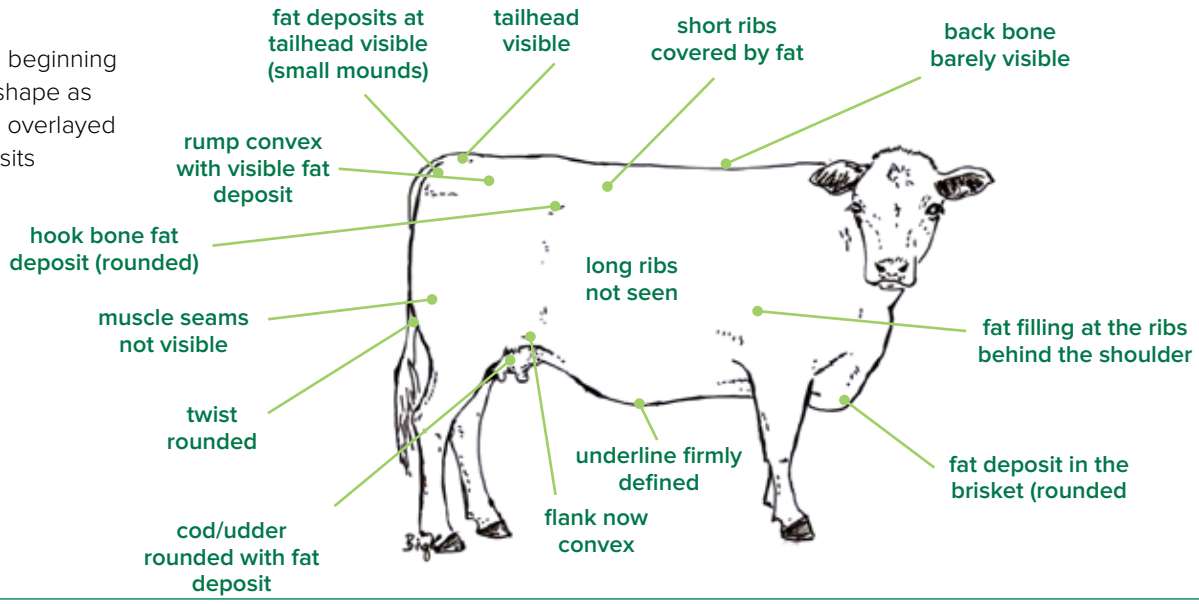
Fat Score 3

skeletal features are not easily visible.



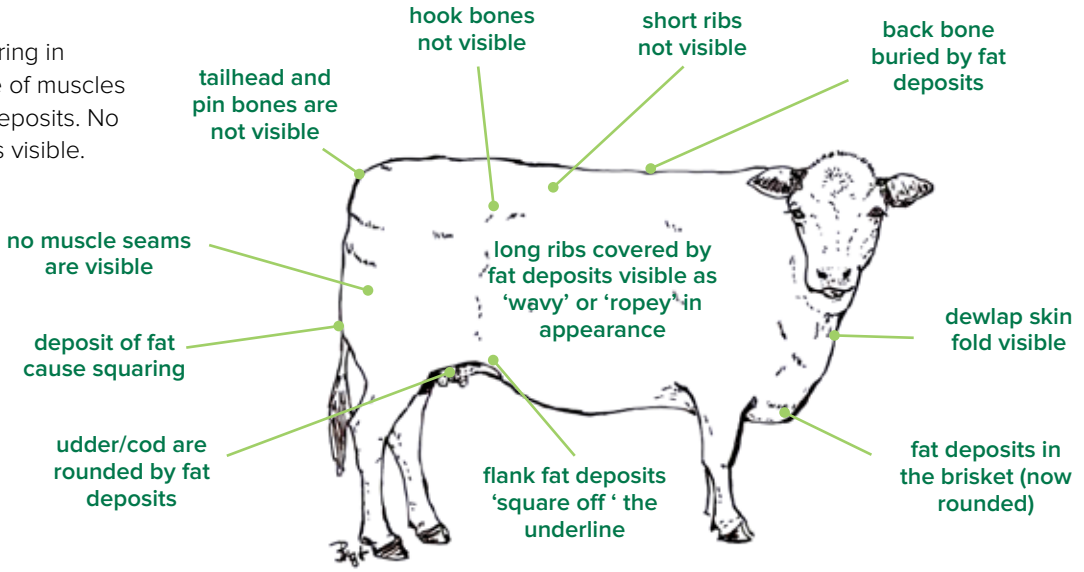
Fat Score 4

The animal is beginning to square in shape as the muscle is overlayed with fat deposits



Fat Score 5

The animal is squaring in shape as curvature of muscles is covered by fat deposits. No skeletal structure is visible.



Fat Score 6

The animal has no skeletal structure visible and has no angular shape.

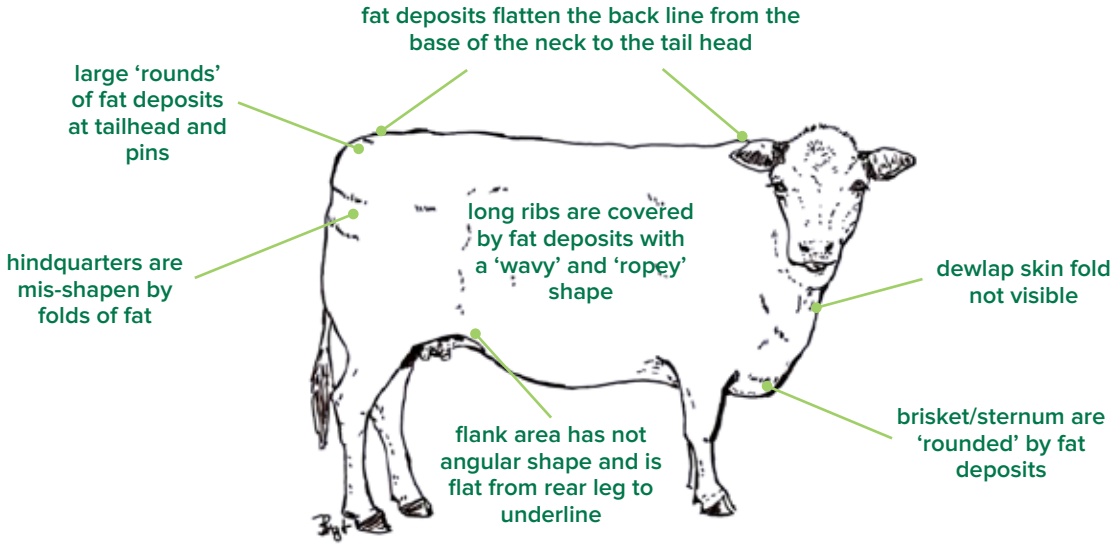
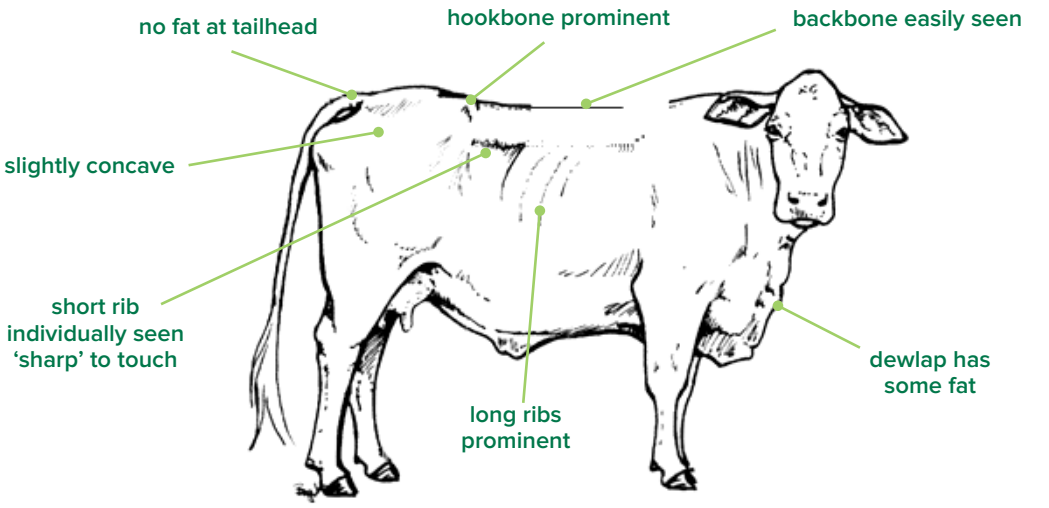


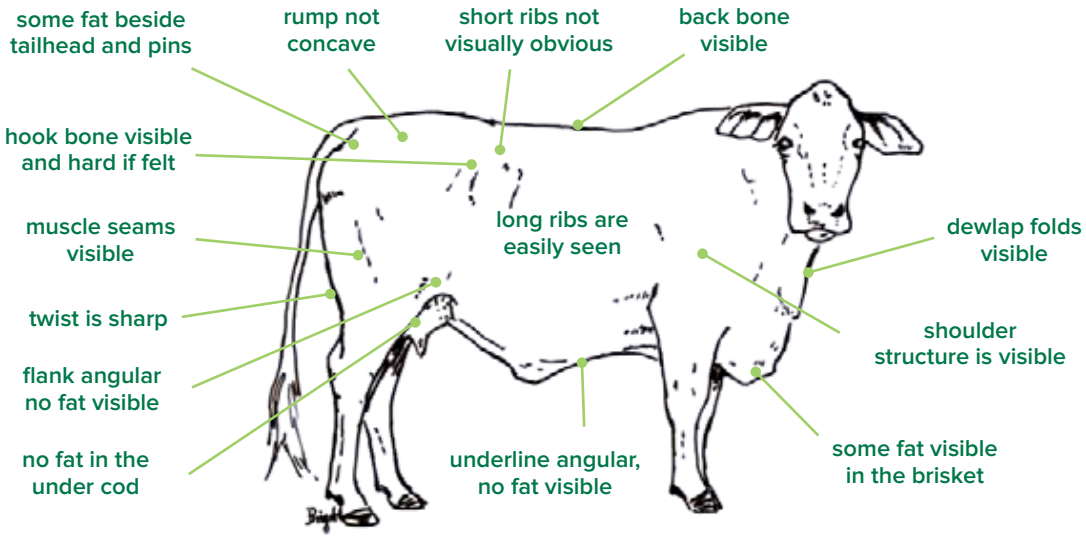
Figure 2. Fat score assessment sites for Tropical composite breeds and crosses

B) Tropical Composite breeds and crosses

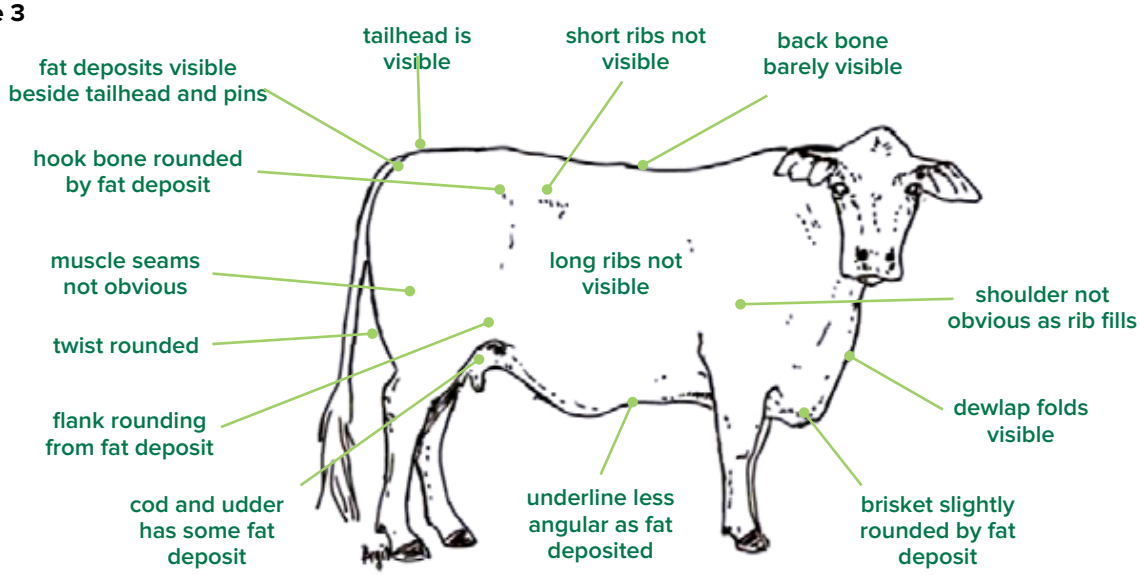
Fat Score 1



Fat Score 2

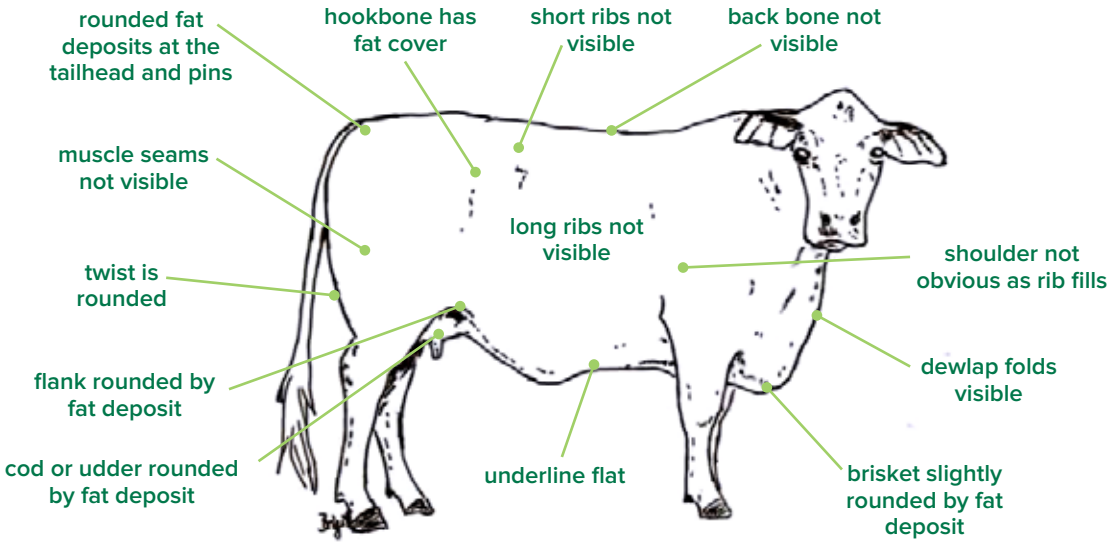


Fat Score 3



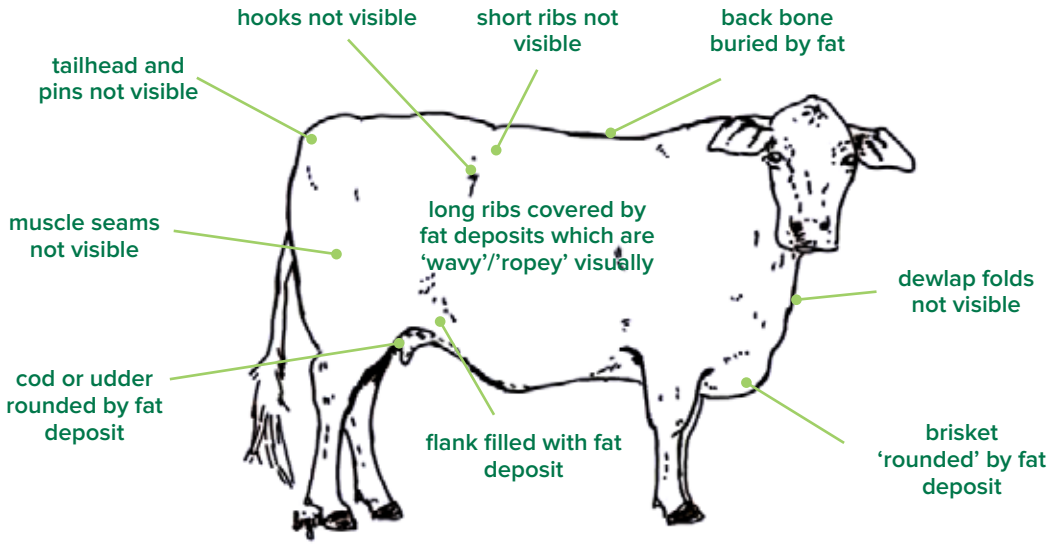
Fat Score 4

Skeletal structure not easily visible. Fat deposits are covering muscle to square the animals shape.



Fat Score 5

No skeletal structure is visible. Animal is square in appearance as all muscle curvature is covered by fat deposits.



Fat Score 6

The animal is 'square'/'blocky' in appearance from fat deposits

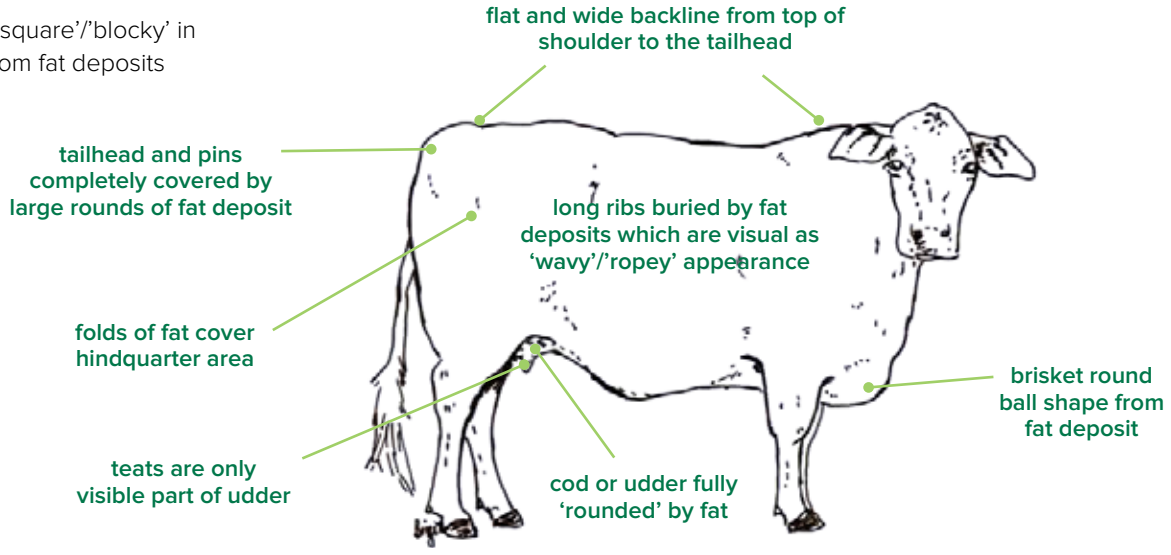
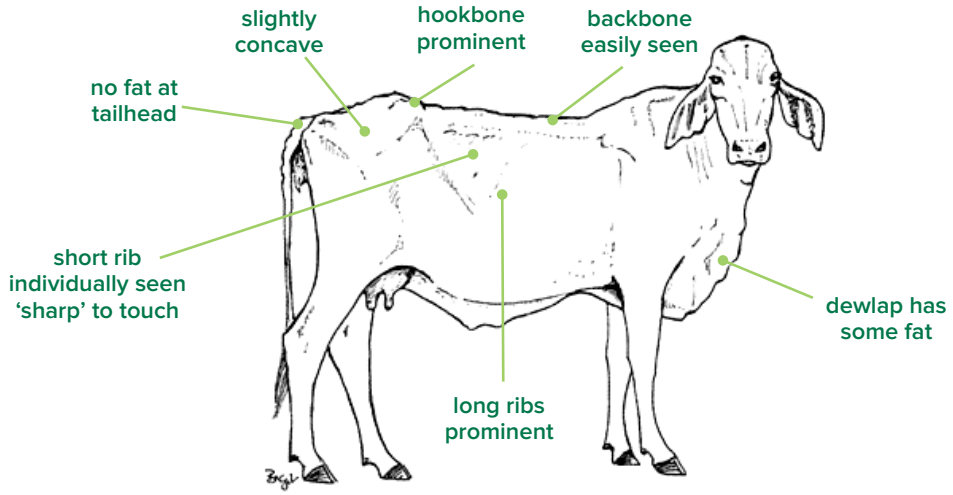


Figure 3. Fat score assessment sites for high grade Brahman

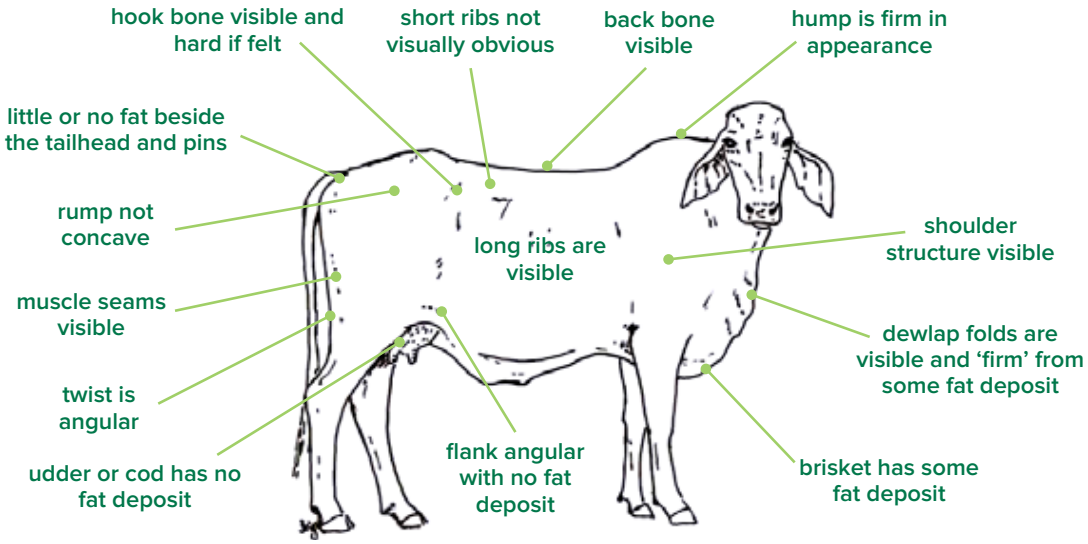
C) High Grade Brahman

Fat Score 1



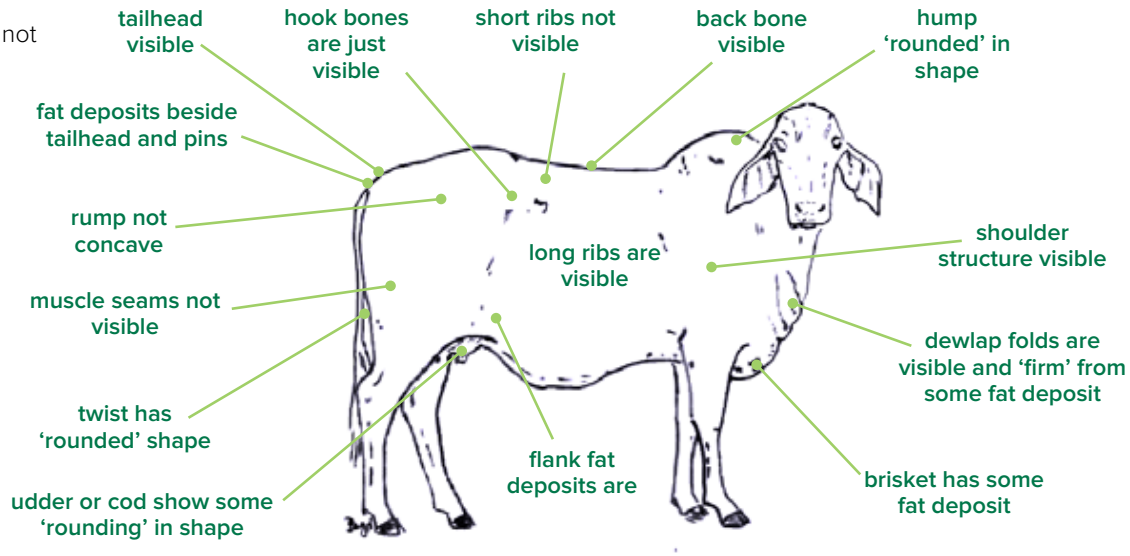
Fat Score 2

Skeletal features are visible



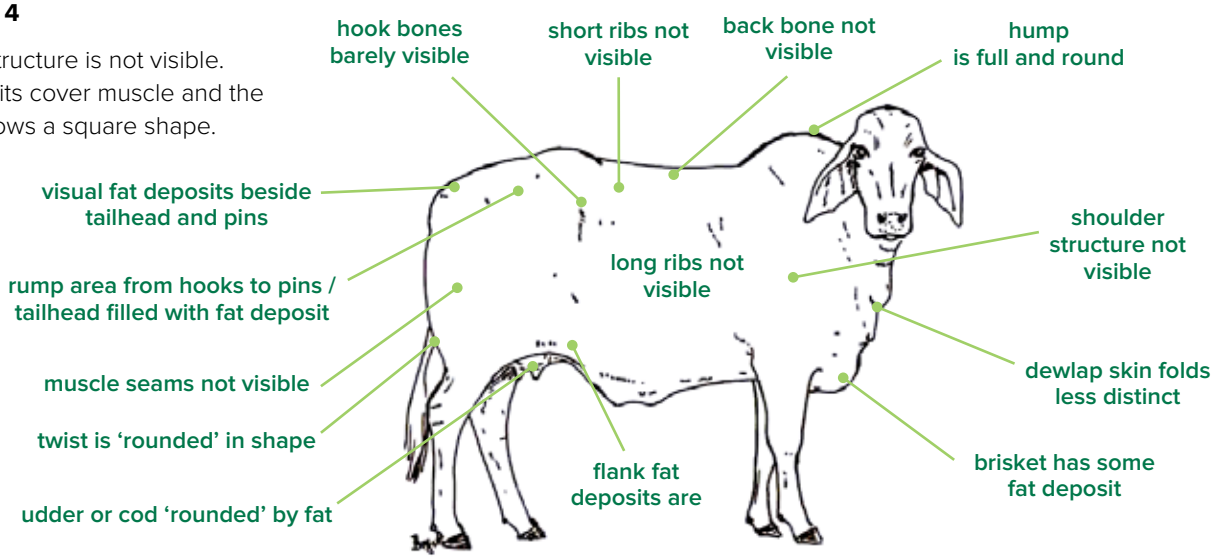
Fat Score 3

Skeletal structure not easily visible



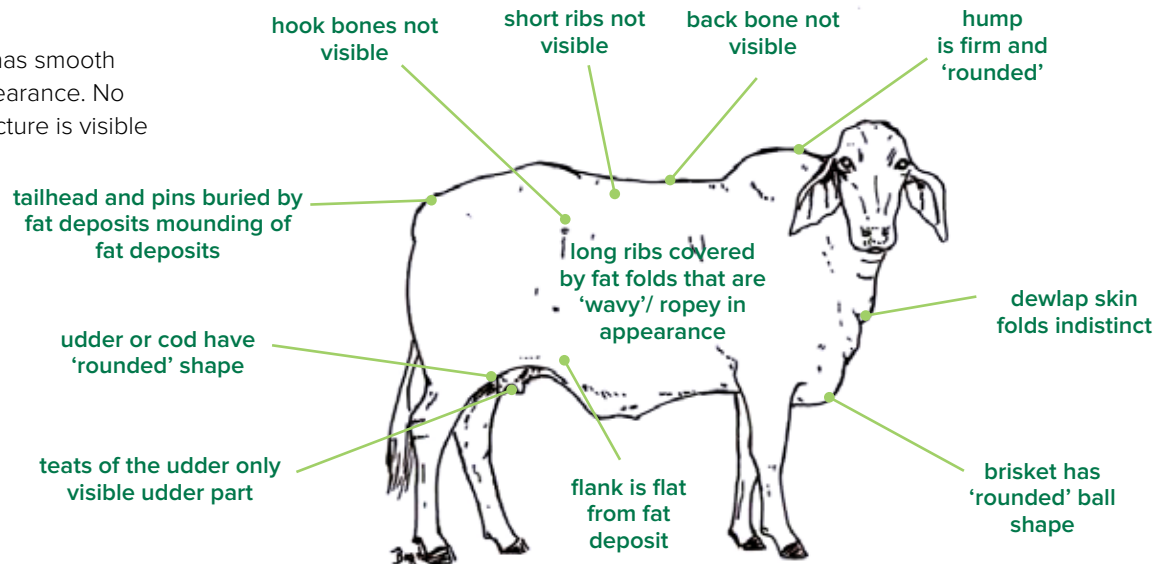
Fat Score 4

Skeletal structure is not visible. Fat deposits cover muscle and the animal shows a square shape.



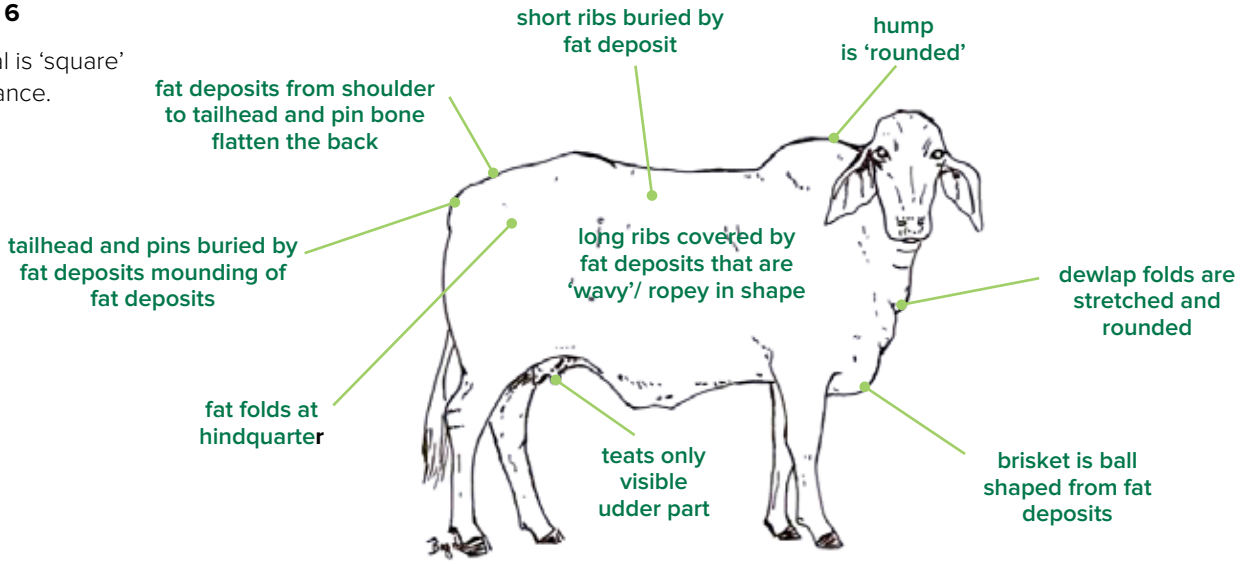
Fat Score 5

The animal has smooth and flat appearance. No skeletal structure is visible



Fat Score 6

The animal is 'square' in appearance.



Source: Meat & Livestock Australia, a National Guide to Describing and managing beef cattle in low body condition, 2013

5. MUSCLE SCORE

LIVESTOCK LANGUAGE GUIDELINE 9

Use of half scores

The Livestock Language has provided a definitive five point scoring system (A-E). These whole scores allow for a simple method of live animal description across the industry sectors.

These scores have clear delineation between each score step.

However to help distinguish smaller differences between animals, and add continuity to the scoring system, the five scores can be further extended to 15 by adding plus and minus to each score (A+ to E-).

The Livestock Language Guidelines however, do not provide methodology to determine the + or – half score. Whilst it is recognised the half scores may be applied in industry use, it is noted that objective assessment reference criteria are not defined.

6. STRUCTURAL ASSESSMENT

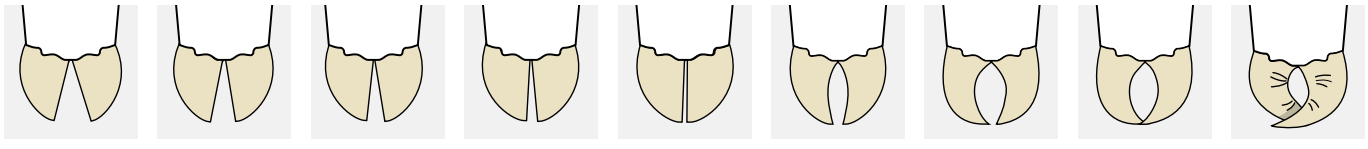
LIVESTOCK LANGUAGE GUIDELINE 10.6

The Cattle Structural Assessment System provided in the Guidelines is intended to be the method for consistent and uniform assessment/scoring cattle for structural traits in cattle for commercial herd management and selection for breeding or sale.

The full range of scores and associated phenotypic diagrams for the structural assessment traits included in the National Livestock Language Guidelines that uses a 1- 9 scoring system are provided here

Feet claw shape

Scoring range 1-9



1 2 3 4 5 6 7 8 9

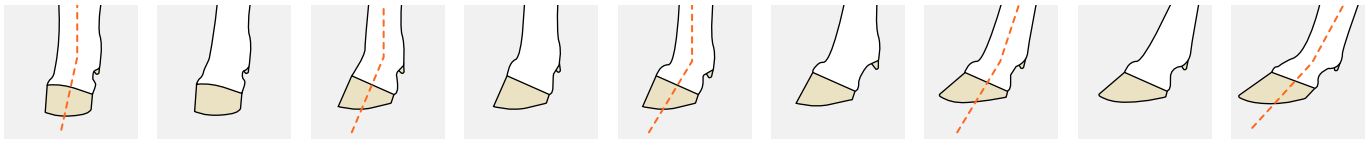
Open divergent — Ideal — Extreme scissor claw

Scoring range 1-9

Feet angle/claw length

Scoring range 1-9

Use the angle of pastern, depth of heel and length of foot (front or rear) to determine score



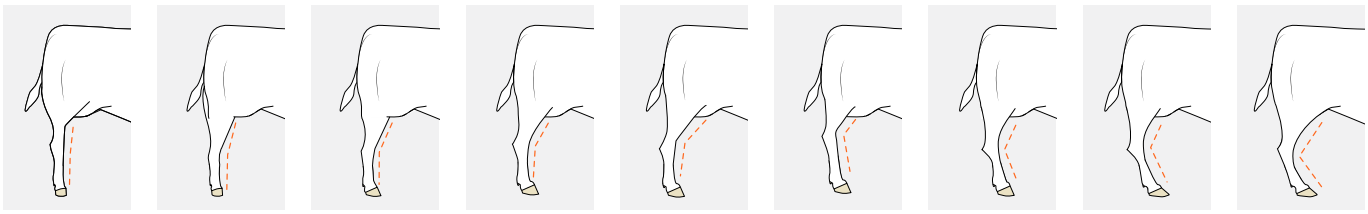
1 2 3 4 5 6 7 8 9

Steep (stubbed toe) — Ideal — Shallow heel

Rear legs

Side View

Scoring range 1-9

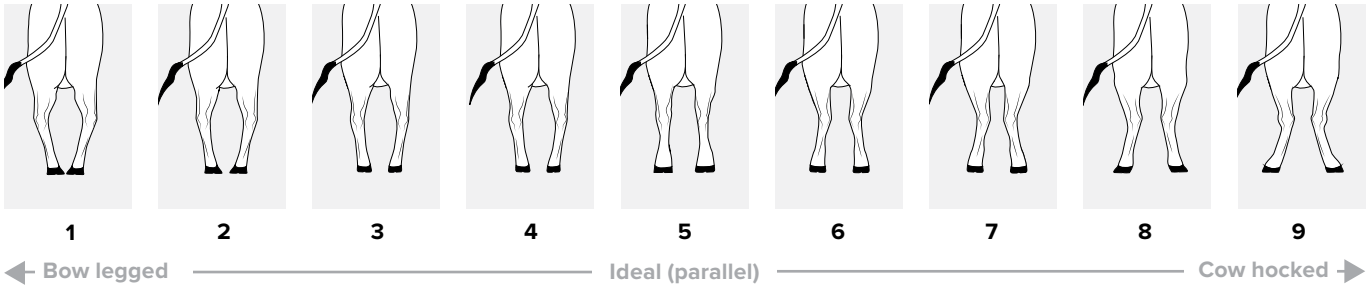


1 2 3 4 5 6 7 8 9

Straight (post legged) — Ideal — Sickle hocked

Hind View

Scoring range 1-9



Use the direction of the feet when viewed from rear to determine score

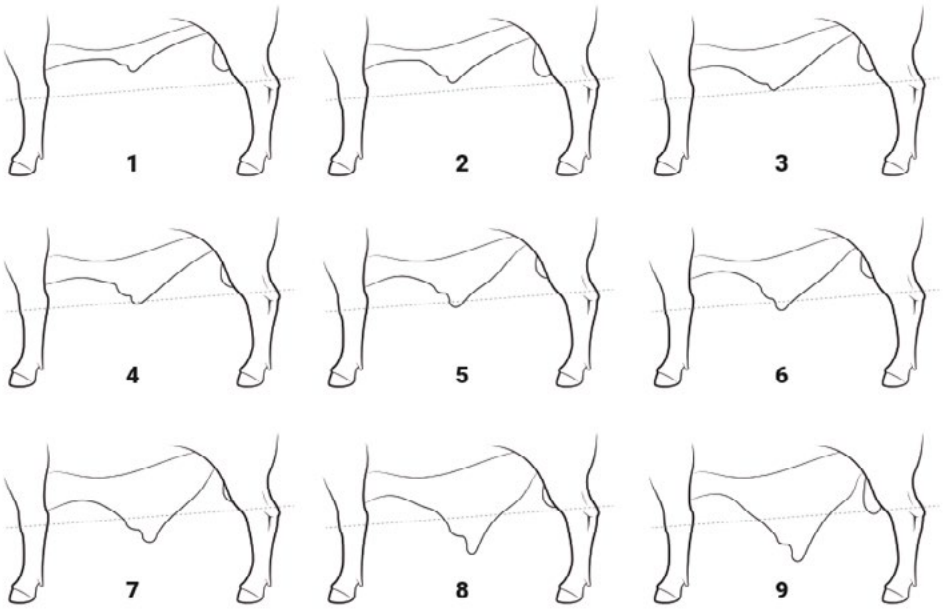
Sheath

Scoring range 1-9

Depth Score = 1

Depth Score = 2

Depth Score = 3



Source: Australian Cattle Veterinarians, a Special Interest Group of the Australian Veterinary Association Ltd.

Udder

Udder evenness

Scoring range 1-9

7. REPRODUCTION

LIVESTOCK LANGUAGE GUIDELINE 11

Calving Ease - Pelvic measurements

Pelvic area measurement of yearling heifers and bulls may be used as a tool to identify females with a higher risk of calving difficulty.

The measurement is taken by using a specialised surgical calliper, inserted in the anus, to measure the height and width of the pelvic area (birth canal) when the animal is between 320 days (10 months) and 410 days (13 months) of age

It is adjusted to be a measurement at 365 days (365-Day Pelvic Area) calculated in square centimetres

Bulls = Actual Pelvic Area (cm2) x [0.25 x (365 – Actual age in days)]

Heifers = Actual Pelvic Area (cm2) x [0.27 x (365 –Actual age in days]

REFERENCES

2016. Guidelines For Uniform Beef Improvement Programs. 9th ed. Prairie: Beef Improvement Federation, p.31.

8. ANIMAL WELFARE

LIVESTOCK LANGUAGE GUIDELINE 15

Description of nutritionally deprived cattle, within an animal welfare framework, has been considered and included in the Livestock Language Guidelines.

The Guidelines have attempted to collate and consolidate key pieces of information to provide a unified approach to animal welfare description within the cattle industry. The Guidelines provide a system to describe cattle that have reached a physical appearance where the skeletal form of the animal is becoming visible.

The proposed fat score system has classifications which are linear from 0 to 6 inclusive. The fat score of 0 comprises two classifications of 'risk', currently called High Risk 1 and High Risk 2. The 'risk' classifications have defined anatomical reference points to determine the classification. The welfare scores fit within the rationale of a linear physical description system.

The term, emaciated, has been used in the Guidelines, within the High Risk 2 and Downer categories that are a sub-category of fat score 0. This provides definitive physical skeletal reference sites observed to determine any classification to help reliably inform industry stakeholders on the management of such animals including during transport and at selling centres and processing establishments.

Adoption of the classifications within fat score 0 offer benefits to:

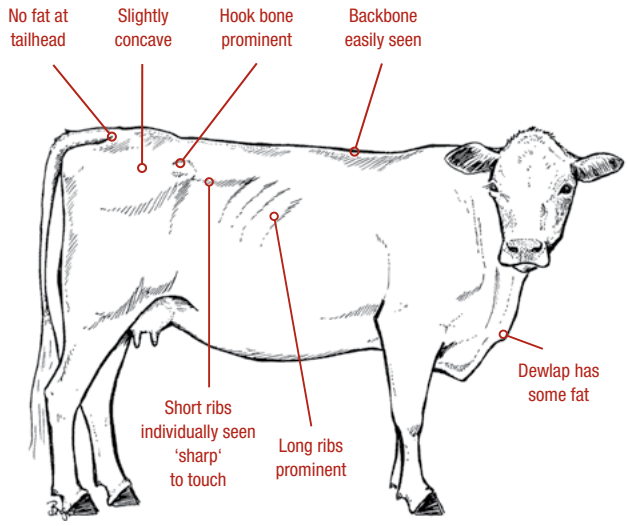
- Enhance compliance to welfare standards within the *Land Transport of Livestock Standards and Guidelines.*
- Provide evidence for animal welfare complaints and allegations.
- Ensure compliance to quality assurance programs
- Be adopted by producers to establish trigger points for decision making, including humane destruction, and preparing cattle for transport.

Points of description for beef cattle

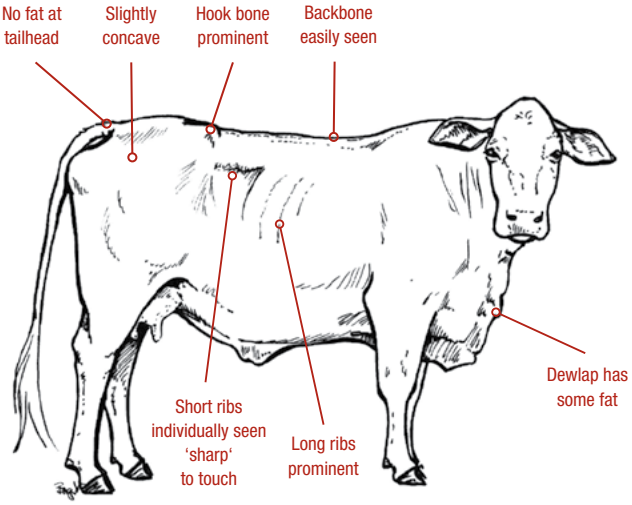
SOURCE: Meat & Livestock Australia

Fat score 1

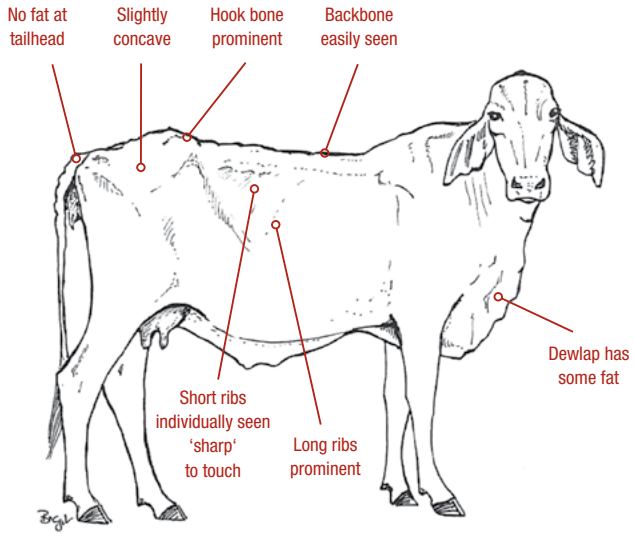
(a) B–E 1 or BCS 2 *Bos taurus* breeds and cross breeds



(b) B–E 1 or BCS 2 tropical composites

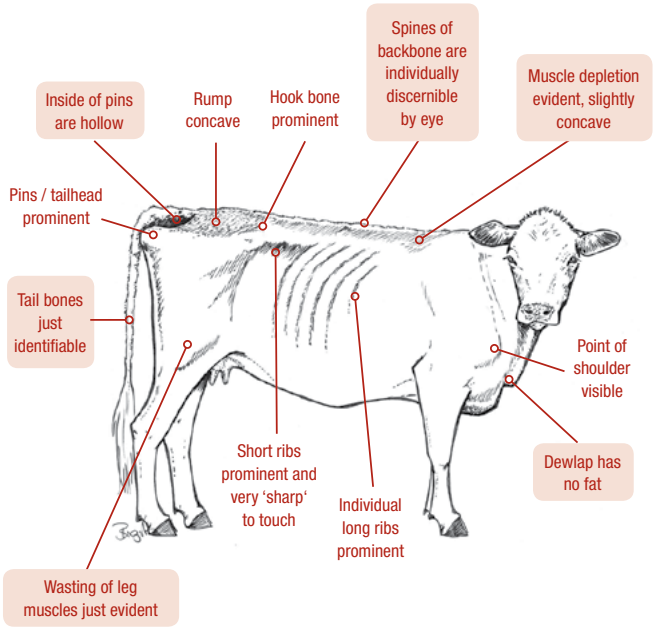


(c) B-E 1 or BCS 2 high grade *Bos indicus* breeds

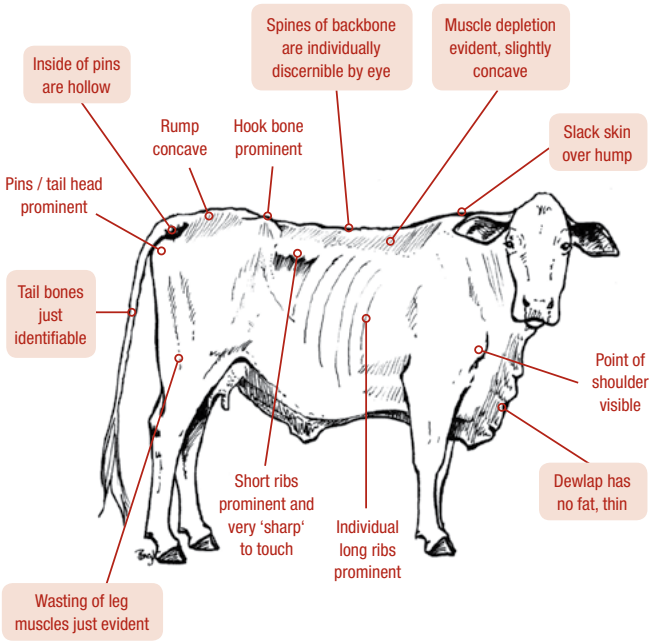


Welfare score High Risk 1 (HR1)

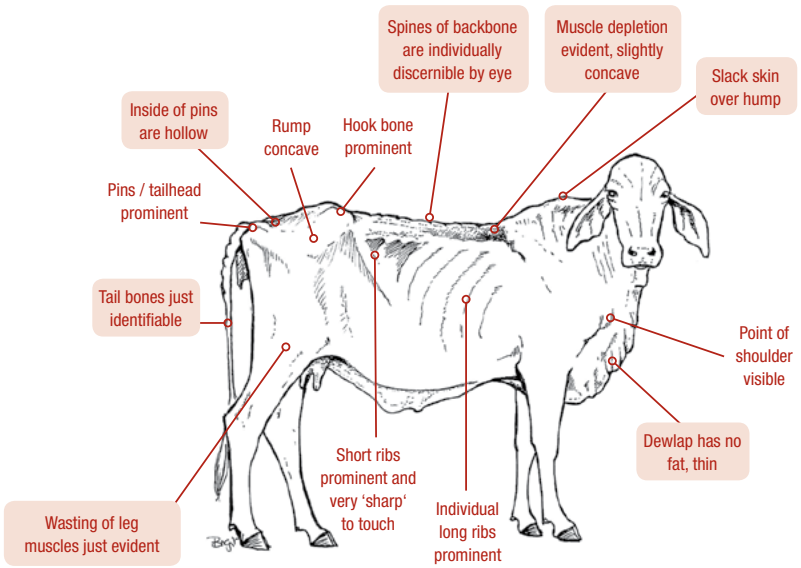
(a) D 0 or BCS 1 *Bos taurus* breeds and crossbreeds



(b) D 0 or BCS 1 tropical composites

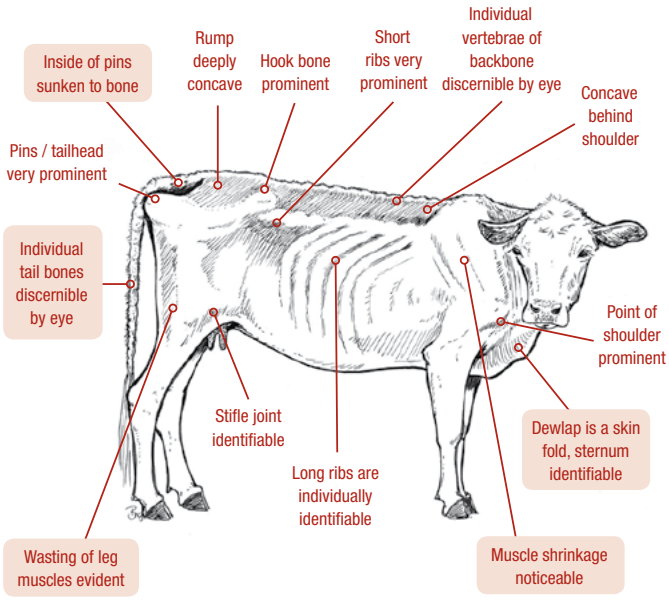


(c) D 0 or BCS 1 high grade *Bos indicus* breeds

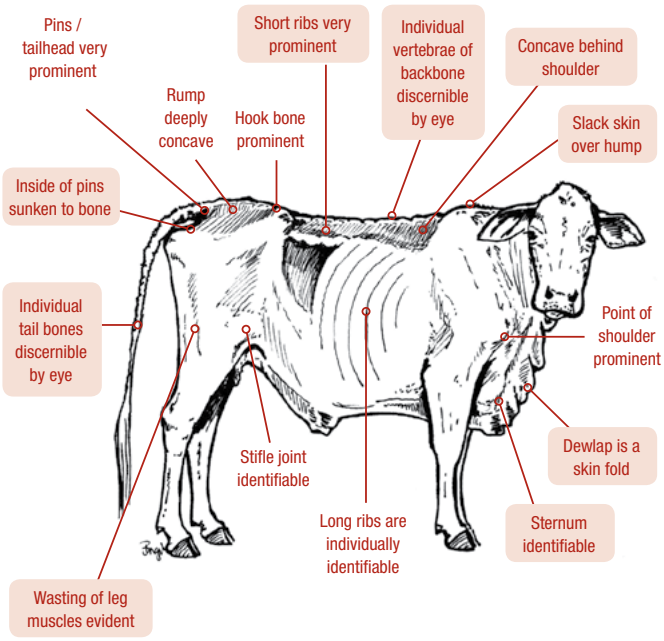


Welfare score High Risk 2 (HR2)

(a) E 0 or BCS 0 *Bos taurus* breeds and crossbreeds



(b) E 0 or BCS 0 tropical composites



(c) E 0 or BCS 0 high grade *Bos indicus* breeds