

NB2 glossary

Term	Definition	Notes	References
2P grasses	Grasses that have any two of the following features: they are perennial, palatable or productive.		
3P grasses	Grasses that are palatable, productive, and perennial.	<p>Some typical examples of 3P grasses include:</p> <ul style="list-style-type: none"> • Black speargrass (<i>Heteropogon contortus</i>), • Brigalow grass (<i>Paspalidium</i> species), • Bull Mitchell grass (<i>Astrebla squarrosa</i>), • Curly bluegrass (<i>Dichanthium fecundum</i>), • Desert mitchell grass [Desert bluegrass] (<i>Bothriochloa ewartiana</i>), • Forest bluegrass (<i>Bothriochloa bladhii</i>), • Giant speargrass (<i>Heteropogon triticeus</i>), • Golden beard grass (<i>Chrysopogon fallax</i>), • Green couch (<i>Cynodon dactylon</i>), • King bluegrass (<i>Dichanthium queenslandicum</i>), • Mitchell grass (<i>Astrebla</i> species), • Native millet (<i>Panicum decompositum</i>), • Queensland blue grass (<i>Dichanthium sericeum</i>), • Tall cup grass (<i>Eriochloa crebra</i>) and • Windmill grass/es (<i>Enteropogon</i> species). 	Grazing Land Management EDGE workshop notes
ABCD land condition	A framework for conducting a visual assessment of the health and functioning of northern grazing lands, where: A = pristine to D = very poor (severe erosion, scalding, or weed prominence).		
Accrual accounting	The method of accounting where all income and expenses that belong in a period are included in that period, regardless of when actual payment occurs. Alternative is cash accounting which is based on when cash was actually spent or received.		Business Edge course notes

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Adult Equivalent (AE)	The Adult Equivalent (AE) is the standard measure of grazing loads used in extensive cattle grazing areas across northern Australia. The standard bovine animal (ie 1 AE) is defined as a 2.25-year-old, 450 kg <i>B. taurus</i> steer maintaining W and walking 7 km/day.	Using the existing NRDR (2007) equations, the energy requirement of this standard animal at zero W change is 73 MJ ME/day. A diet energy density of 7.75 MJ/kg DM (equivalent to 55% DMD) is assumed.	McLennan, McLean & Paton (2020)
AE days	A measure of livestock grazing capacity. Calculated by multiplying the number of adult equivalents by the number of days that an area is grazed. Particularly useful for forage budgeting in grazing systems where paddocks are not used for the entire year.	E.g. 150 AE grazing an area for 10 days is equivalent to 1500 AE Days. These AE Days could also be “deployed” in numerous other combinations. E.g. 15 AE for 100 days etc. Analogous to “Stock Days”	
Aged cow	A cow with diminishing ability to forage or diminished fertility	Start usually ranges from 8 years of age where environments cause early wearing fracture and loss of teeth, to 13 years of age when stores of ova become depleted in some cows.	
AGID	Agar gel immuno-diffusion.	A pathology laboratory test for antibodies. Commonly used for pestivirus screening.	
Annual percentage of pregnant cows missing	Defined as the percentage of cows that had been enrolled in a study and diagnosed pregnant, but without any record of having been <i>culled</i> , did not contribute any further data at any subsequent musters.		
Anoestrus	A period of sexual inactivity between two periods of oestrus in many mammals.		
Antibody	Large proteins constructed by white blood cells that bind to foreign chemical in the body.	Neutralises foreign chemical effects and facilitates elimination from the body.	
Antigen	A chemical or particle foreign to the body.		

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AI	Artificial insemination.	The technique of collecting the male sperm and inserting it, via a pipette, into the female reproductive tract of an animal in oestrus.	
Asset appreciation	[Increase (decrease) in land value/total assets] The increase in the value of assets in the period, effectively your return from owning the assets, expressed as a percentage.	Also called capital value change or capital return.	Business Edge course notes
Average	The total divided by the number of observations.		
Balance sheet	A simple statement of net worth at a point in time (usually year-end). Net worth (equity) is calculated by subtracting the value of all your liabilities from your assets.		Business Edge course notes
Bang tail	The practice of trimming the end of the tail hairs for medium term identification.		
Bang tail muster	Used to determine efficiency of muster and also to assess the numbers of cattle in a paddock by using the trap and release calculations.		
BBSE	Bull Breeding Soundness Evaluation.	This is a process that assesses five elements against standards that relate to calf-getting ability during natural mating.	
Beef CRC	Beef Co-operative Research Centre	A multi-agency research conglomerate that studies the genetics and genomics of beef cattle production across Australia with Federal Government support.	
BEF	Bovine Ephemeral Fever	Technical term for 'Three-day sickness' – a virus disease spread by biting insects that causes waves of high fever and lameness over several days.	
Bench marking	The process of analysing and quantifying the performance of the business and enterprise,		

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	comparing those results against own past performance and other producers.		
Benchmarking	The process of analysing and quantifying the performance of the business and comparing those results against past performance and other producers.		Business Edge course notes
Benefit-cost ratio	The total of the discounted inflows divided by the total of discounted outflows of an investment.		Business Edge course notes
Black globe temperature	A means of assessing the combined effects of solar radiation, air temperature and air velocity on animal comfort.	The main effect is solar radiation.	
Body condition score	Subjective assessment of the body tissue (fat and muscle) reserves of an animal.	Five point scale (1 = poor), 2 = backward, 3 = moderate, 4 = forward/good, 5 = fat).	
<i>Bos indicus</i>	Sub-species of cattle originating in tropical southern Asia.	Brahmans are derived predominately from <i>Bos indicus</i> cattle.	
<i>Bos taurus</i>	Sub-species of cattle originating in Europe, and includes British and continental breeds.		
Botulism	Lethal disease caused by a bacterium (<i>Clostridium botulinum</i>) that presents as flaccid paralysis.	A very common bacteria (same family as tetanus and blackleg) that produces extremely deadly toxins. The toxins are usually consumed when cattle develop depraved appetites, most often when diets become deficient under seasonal extremes.	
Box and whisker plots	A graphic demonstration of data distribution.	The whiskers indicate extreme values. The central box extremities are the 25 th and 75 th percentiles. The box midline is the median.	
Branding rate	The branding rate is the ratio of surviving calves to the number of cows mated and provides an indicator of cow fertility and calf mortality.		

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Breakeven analysis	The number of years it takes to recoup the initial outlay of an investment.		
Breedcow	Computer program for comparing the likely profitability of the herd under different management or turnoff systems.		
Calf output	The number of calves produced.		
Calf/foetal loss	See reproductive wastage	Generally refers to losses that occur between a positive pregnancy diagnosis and weaning – includes abortions, perinatal calf deaths and losses after weaning.	
Capital allocation	Capital allocation is ensuring the business is adequately funded in the short and long term. It is the process of deciding on the best investment of funds within the business, a process which should be done rationally and objectively that identifies the best outcome for the business and whether sufficient funds are available.		Business Edge course notes
Capital expenditure (capex)	Spending money either to buy assets or to add to the value of an existing asset with a useful life extending beyond the current year. The expenditure is capitalised (added to asset account) and the cost is spread over its useful life through depreciation.	Operational capital expenditure refers to the replacement of existing plant, equipment and infrastructure . Developmental capital expenditure is expenditure on plant, equipment, infrastructure and technology that is new to the business.	Business Edge course notes
Carbon sequestration	The long-term storage of carbon in plants, soils, geological formations and the oceans.		
Cashflow statement	A summary of the flow of cash in and out of the business in a period.	Only captures when transactions occur, not which year it belongs to, and does not distinguish between operating and capital items.	Business Edge course notes

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Cattle year	Twelve-month period ending at a natural point in livestock transactions and handling. Usually after the last weaning muster in north Australian beef businesses.		
Central forest	Forested areas associated with the Brigalow areas of Central Queensland.		
Cervix	The muscular organ that connects the vagina to the uterus.	Mostly remains tightly closed to prevent infection but relaxes when an animal comes into oestrus.	
Chart of accounts	The names given to the income and expense categories in a business' financial system.		Business Edge course notes
Closing numbers	The number of cattle at the end of the cattle year.	Usually the financial year to comply with taxation requirements.	
Compliance accounts	Financial statements prepared for the purpose of estimating tax liability on the reported profit for period.	Not suitable for management decision making as it does not show true economic performance of the business.	Business Edge course notes
Composite	A stabilised or synthetic crossbred breed established from the mating of the progeny of two or more existing breeds.	Eg Belmont Red, Droughtmaster etc	
Conception rate	Number of animals known to have conceived over a defined period, divided by the number of non-pregnant animals mated.		
Confidence interval	Values calculated in statistical analyses are estimates based on one set of measurements. The range within which 95% of estimates would occur if recalculated from independent sets of measurements is called the confidence interval.		
Controlled mating	Non-continuous mating.	The longest controlled mating is 7 months. Five months may allow mating after first weaning. Three months enables most calving to	

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		be complete before the next mating. Six weeks enables a maximum pregnancy rate of 90% in healthy cycling beef heifers and cows.	
Cost of capital	The cost of a business' funds , both debt and equity.	The cost of debt is known, the cost used for equity should be the rate of return that capital could be expected to earn in an alternative investment of equivalent risk.	
Cost of production	A common benchmark that determines the cost of producing a kilogram of liveweight in a beef enterprise - includes variable and fixed costs (overheads).		
Cow	Female cattle after first mating, whether non-pregnant or from mid-pregnancy.		
Critical mating weight (CMW)	The weight at which 84% of maiden heifers will conceive in a six-week period. It is based on a 60% conception rate in the first cycle of mating followed by a 60% conception rate of the remaining non-pregnant heifers in the second cycle, ie $60\% + (60\% \text{ of } 40)$.		
Crossbred	Progeny from crossing two or more breeds, lines or strains.		
Crossbreeding	Mating system in which two or more straight (ie purebred) breeds are combined.		
Crude protein	Weight percentage of nitrogen in a feed multiplied by 6.25; this is because protein averages 16% nitrogen by weight.		
Culling	Removal of unwanted animals from a population.		

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Current long-term carrying capacity (LTCC)	See LTCC		
Cycle or oestrus cycle	Regular sequence of stages that the cow undergoes from one oestrus or 'heat' to the next.	The oestrus cycle is divided into four stages: 1. oestrus – the heat or season phase of the cycle when mating occurs. 2. metoestrus – the phase of the oestrus cycle immediately after oestrus. 3. dio-estrus – the period in between normal heat periods. 4. pro-oestrus – the phase of the oestrus cycle immediately before oestrus.	
Decision Dates	Key identified dates of the year to assist with decision making, particularly with regard to feedbase management.		Grazing fundamentals EDGE workshop notes
Decision Date 1	Mid-way through the typical growing season to assess whether the Production Point has been reached.	If the Production Point has not been reached, the feed supply is likely to be below average for the year ahead	Grazing fundamentals EDGE workshop notes
Decision Date 2	End of the growing season. This is the time to assess the feed on hand and do a forage budget for the non-growing season.		Grazing fundamentals EDGE workshop notes
Depreciation	Depreciation is the allocation of the cost of assets that have a finite life, over their estimated useful life.	This equates to the amount that must be provisioned to replace those items. It is a non-cash expense which is why it does not appear in the cashflow statement. The corresponding cashflow item is capital expenditure, which is the initial purchase of the asset.	Business Edge course notes
Development	Testing and demonstrating practical application of research outcomes in beef businesses.		

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Discount rate	The return you require from your investment. It is the rate used to discount future cashflows into today's dollars.		Business Edge course notes
Digestible energy	Amount of energy in the diet that is digested and absorbed from the intestine, expressed as Megajoules per kg of dry matter.		
Dry cow	Non-lactating cow, i.e. cow not suckling a calf.		
Dry matter	Non-water part of a feed sample.	For example, early wet season pasture may have as little as 30% dry matter, in contrast to late dry season feed which may have in excess of 90% dry matter.	
Dry matter digestibility	Proportion of dry matter in a diet that is not excreted as faeces.	For example, 60% digestible means that a cow eating 10 kg of dry matter will excrete 4 kg of that dry matter as faeces.	
Dry matter intake	Dry matter eaten daily by an animal, usually expressed as a percentage of liveweight.	Typically between 1.5% (very poor diets) and 2.5% (feedlot diets).	
Dystocia	Difficult birth, often requiring human intervention to prevent loss of the dam and or offspring.		
EBIT	Earnings Before Interest and Tax	Important measure of business performance, also known as the operating profit of the business, before interest and tax are accounted for. It allows performance to be analysed independently of financing and ownership structure.	Business Edge course notes
EBV	Estimated Breeding Value.	An unbiased estimate of the genetic merit for a specified trait in relation to breed average when first published. Each EBV has an accuracy estimate indicating the likely range that the true value is within.	
Economics	Assessing the relative merits of business choices for the future.		

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Economic sustainability	To be economically sustainable a business must: <ul style="list-style-type: none"> • generate a return that meets or exceeds its cost of capital • fund all current operating expenses and operational capital expenditure through internally generated working capital • remunerate its owners adequately, at least to the standard of the average wage earner • have the capacity to repay debt principal in a timely manner • maintain a 'safe' level of equity • provide for the independent retirement of the existing owners • be able to survive business succession with the business and the family remaining intact • survive and prosper in the long term without the erosion of environmental capital (environmental sustainability) 		Business Edge course notes
EID	Electronic Identification Device.	An implant or tag containing an RFID (radio frequency identification device).	
ELISA	Enzyme-linked immunosorbent assay. A commonly used lab test for disease agents or their antibodies.		
EMAI	Elizabeth Macarthur Agricultural Institute.	A NSW group that provides diagnostic services to the animal industries of that State.	
Embryo	The stage of pre-natal development between conception and differentiation of all organs.	In cattle, this is at ~day 42.	
Embryo transfer (ET)	Technique of removing an embryo from one female (donor) and implanting it into another female (recipient).		
Empty	Refers to a non-pregnant animal.		
End of wet season	The date when the final rain was recorded at a given location in the north Australian wet season.		
Energy	Force holding molecules together, which is released as heat when molecules are split. The		

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	heat drives biochemical reactions in the body, thus life.		
Enterprise expenses	Expenses that are specific to the enterprise in question and rise and fall with the size of the enterprise. (Also called direct or variable expenses)	In the case of a beef business they are herd-specific expenses and rise and fall with the numbers of cattle, for instance, supplementation is an enterprise expense and will rise and fall with the size of the herd.	Business Edge course notes
Epidemiology	Study of all the interactive processes that result in disease.	Encompasses the agent, the host and the environment.	
Equity	Total assets minus total liabilities, ie the net worth of a business to its owners.		Business Edge course notes
Equity %	The percentage of the business's total assets that the owners actually own.		Business Edge course notes
Exposure	Direct or indirect exposure to an infectious agent such as pestivirus.		
Extension	The process of supporting practice change by producers to improve their business.		
Feedbase	The suite of perennial grasses, annual grasses, forbs, native legumes, edible shrubs and edible trees in a grazing area that provide potential forage for livestock.		
Fertility	Attributes of males and females that contribute to reproduction, ie rearing an offspring to the point where it can live independently.		
First-lactation cow	Cow during the period when the majority of her cohort is experiencing their first lactation.		

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Flash drought	Flash drought is simply the rapid onset or intensification of drought. It is set in motion by lower-than-normal rates of precipitation, accompanied by abnormally high temperatures, winds, and radiation. Together, these changes in weather can rapidly alter the local climate.	(Source: https://www.drought.gov/what-is-drought/flash-drought)	
Foetal ageing	Diagnosing age of a foetus using rectal palpation with or without the aid of ultrasound.		
Foetus	Pre-natal development of an animal after it transitions from the embryo stage.		
Follicle	The fluid-filled structure in which ova mature in the ovary.		
Follow up rain	The next rainfall event following a seasonal break, which is sufficient to sustain pasture growth.		
Forage budget	The outcome of a process of calculating forage supply and livestock demand over a set period.		
Full-time equivalent (FTE)	The total labour used by the business (owners, family, employees and contractors) expressed as multiples of a full-time person.	eg a four person contract mustering team for a month is 0.33 FTE	Business Edge course notes
Genome wide selection (GWS)	A method to increase efficiency and accelerate the genetic improvement, emphasizing the simultaneous prediction of the genetic effects of a large number of DNA genetic markers scattered throughout the cattle genome.		
Genotype	Similar to breed.	Specifically, the grouping for an animal as defined by its genes.	
Grazing systems	A grazing system is defined as a way of managing the interaction between plants, soil, and livestock.	While there may be different degrees of a system the best ones balance all of these factors to get the best results possible. It is a	

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		scientific approach to balancing different factors to optimize performance.	
Green Date	The start of the growing season - when there is sufficient soil water, daylight hours, temperatures and plant available nutrients to <u>initiate</u> growth in the majority of the pasture species.		Grazing fundamentals EDGE workshop notes.
Gross margin	[Gross profit – enterprise expenses]	The financial result of an enterprise, or business as a whole, before any business overhead expenses are taken into account.	Business Edge course notes
Gross profit	[Sales – purchases +/- inventory change]	The effective income of the business, which is gross sales, less purchases and plus or minus the increase or decrease in inventory value during the year.	Business Edge course notes
Ground cover	The vegetation (living and dead), biological crusts and stone that is in contact with the soil surface.	Australian Government Department of Agriculture, Water & the Environment https://www.agriculture.gov.au/abares/aclump/definitions	
Growing season	The period of the year when there is sufficient soil water, daylight hours, temperatures and plant available nutrients to <u>sustain</u> pasture growth.		Grazing fundamentals EDGE workshop notes.
Growth rate	Change in weight divided by the time period.		
Head (of)	Colloquial term for number of cattle.	Almost always can be excluded without loss of meaning.	
Heat Load Index (HLI)	Environmental comfort index that combines ¹ ambient temperature (°C), wind speed (m/s), solar load (black globe temperature, °C) and relative humidity (%), with specific breed type thresholds.		
Heifer	Young cohort of female cattle up to the time the majority should have calved, after which the cohort is classed as first-lactation cows.		

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Heritability	Proportion of a trait that is transferred from one generation to the next; alternatively, the proportion of a trait that is due to variation in DNA.		
Heterosis (hybrid vigour)	Differences in performance or vigour of crossbred progeny from the average of two genetically different parental breeds or lines.		
Hip height	Height at the peak of the sacrum which is adjacent to the hip joints. Note: hook bones, not hip joints, protrude.		
Hormone	A chemical produced in one part of the body that is transported to another part where it has its action.		
Incidence	The proportion of a population that becomes affected during a defined time period.		
Income statement	A summary of the full financial performance of the business for the year. (Also referred to as profit and loss statement)	Differs from cashflow by taking into account change in inventory, depreciation and owner wages, and also by ensuring that all items relate to that year (accrual accounting). Shows the change in wealth from business operations in that year (excluding capital gains).	Business Edge course notes
Intensity of selection	The proportion of the population retained for breeding purposes.		
Intercalving interval	The interval between two consecutive calvings.		
Interquartile	The range between the 25 th and 75 th percentiles.		
Internal rate of return (IRR)	The discount rate that gives an investment a net present value of zero.		Business Edge course notes

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Inventory	In a pastoral business this is the livestock. The market value of stock owned, calculated at the start and end of the year, using consistent values within years.		Business Edge course notes
Inventory change	The change in inventory value (flock and herd) from the start to the end of the year, using constant values by class for that year.	Is accounted for in determining gross profit, along with sales and purchases.	Business Edge course notes
IVF	Invitro fertilisation - the process whereby oocytes (unfertilised eggs) are extracted from the ovary of the donor female, then matured, fertilised and cultured in vitro (in the lab).	This differs from ET systems as, in ET, the process occurs all within the donor female prior to flushing. In IVF, as oocytes are directly retrieved from the ovary of the donor female. (Source: https://www.repro360.com.au/reproductivetechnologies/)	
Key Performance Indicators (KPIs)	Key measures that provide insight into the performance of the business and the underlying factors that determine that performance.		Business Edge course notes
Labour efficiency	A measure of how efficient a business uses labour, expressed as the number of AE run per full time equivalent of labour (FTE).		Business Edge course notes
Lactation rate	Cows weaning a calf as a percentage of closing numbers (number of cattle at the end of the cattle year) within a group.		
Land condition	The capacity of land to respond to rain and produce useful forage.	A measure of how well the energy, water and nutrient cycles are functioning in the grazing ecosystem.	
Land systems	A scientific term describing a land area or group of areas throughout which there is a recurring pattern of topography, soils and vegetation.	Made up of 2 or more land units.	Grazing Land Management EDGE workshop notes
Land types	A broad association of similar soils and vegetation types that are easily recognised by landholders in a	E.g. "dune country", "mulga woodland", "blacksoil plains".	Grazing Land Management EDGE workshop notes

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	region; an area of grazing land with a characteristic pattern of soil and vegetation.		
Land units	A scientific term describing a recognisable landform within a land system.	E.g. Gentle sloping plains, steep hills, drainage lines.	Grazing Land Management EDGE workshop notes
Leptospirosis	Zoonotic bacterial disease spread in urine that can cause reproductive loss in cattle.		
Leveraging	Use of debt to 'leverage' equity and increase total assets (capital) invested in the business.	If return on assets exceeds cost of debt, the process leverages the return on equity, and conversely if it doesn't.	Business Edge course notes
Literature	The aggregate of written and published records that are generated by research or theoretical summarisations and are circulated to inform specialists on the latest achievements of science and on the progress and results of research.		Business Edge course notes
Line breeding	An inbreeding strategy to maximise the chances of retaining desired traits in breeding animals.		
Live weight production	Annual net live weight production per (retained) cow = Average live weight of cows at the end of the measured period x (1 – mortality rate) + Average weight of weaners produced x Lactation rate - Average cow live weight at the start of the measurement period.		
Liveweight production ratio	Liveweight production ratio = kg produced/kg cattle	Females: annual net liveweight production / (average cow liveweight over the year + Average weight due to weaners over the year) Males: annual net liveweight production / average liveweight of males over the year	

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Long-term carrying capacity (LTCC)	Long-term carrying capacity is the average number of animals that a grazing area can be expected to support over a set period (e.g. 10+ years).	Potential LTCC is the average number that a grazing area can be expected to support when it is fully watered and in 'A' land condition. Current LTCC is the average number that a grazing area can be expected to support with it's current watered area and land condition.	
Maiden heifer	Heifer prior to first mating.		
Maintenance	The level of energy required for an animal to live normally without any change in live weight.		
Management accounts	Accounts prepared for use for management decisions, using current market values for assets, depreciation based on useful economic life and accurate allocation of capital expenditure.		Business Edge course notes
Mating outcome	Events and result for an individual cow over a reproductive cycle.		
Mating percentage	Number of bulls divided by the number of heifers and or cows in a mating group expressed as a percentage.		
Mature cow	Cow after the time when her cohort has weaned their second age group of calves.	Generally when she has reached maturity at approximately 5 years of age.	
Mature Cow Weight	Weight of a cow in score 3 when non-pregnant and aged 5 years or older.		
Mean	Synonym for average.		
Median	Point where half the data of interest is higher and half is lower = 50 th percentile.		
Metabolisable energy (ME)	Metabolizable Energy (ME) is the net energy remaining after fecal and urinary energy loss, and		

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	represents the energy available for growth or reproduction and for supporting metabolic processes such as work (locomotion) and respiration (thermoregulation, maintenance metabolism).		
Missing	Animals that fail to return for routine measures, but not including irregular absentees.	It comprises mortalities, animals whose individual identity is lost, and those that permanently relocate either of their own accord or without being recorded by a manager.	
Mob	A synonym for management group, in contrast to a herd which is the entire population of animals within a business entity.		
Mob-year	A collective term referring to a management group of females within a property that were recorded during a common annual production cycle.		
Mortality rate	Cattle that have died as a percentage of the number known to be alive at a previous time.		
Multivariable model	More than one variable is included in a statistical analysis, so the effects of all variables are accounted for in calculating the independent effect of each factor on the outcome variable.		
Mustering efficiency	One minus the proportion of absentee animals from a muster.	Note that this does not include missing cows.	
NAFI	The North Australia and Rangelands Fire Information website.	See: https://firenorth.org.au/nafi3/	
Naïve	A naïve animal is one that has not been challenged by a specific infectious agent, and therefore has no immune system evidence (antibody) of this.		

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Naturally immune	Immunity is gained by exposure to an infectious agent under field conditions rather than by vaccination or experimental challenge.		
NCPD	National Pregnancy Diagnosis Scheme of the Australian Cattle Veterinarians which ensures veterinarians can accurately diagnose pregnancy status and foetal age in cattle and meet quality assurance requirements.		
Neonatal	New-born, generally within a week of birth.		
Neospora	Protozoan parasite that can cause mid-term abortion, especially in dairy cattle.	Spread from cow to calf during pregnancy. Source of infection is faeces from infected canines, including domestic dogs, wild dogs, and foxes.	
Net present value (NPV)	The difference between the present value of cash inflows and the present value of cash outflows of an investment.		Business Edge course notes
Net profit after tax (NPAT)	The true bottom line of the business where everything but capital expenditure, debt principal repayments and financial provisioning have been taken into account.		Business Edge course notes
NIRS	Near-infrared reflectance spectroscopy. A system of using light bands absorbed/reflected from a sample material to describe its properties.	Digestibility and crude protein levels of cattle diets can be estimated from NIRS of a dried faecal sample.	
Nitrogen	Element found in all proteins.		
NLIS	National Livestock Identification Scheme.	Animals are given an EID that has a unique external printed number and matching unique internal electronic number.	

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Non-growing season	The period of the year when there is insufficient soil water, daylight hours, temperatures and/or plant available nutrients to <u>sustain</u> pasture growth.		Grazing fundamentals EDGE workshop notes
Non-protein nitrogen (NPN)	Non-protein nitrogen (NPN) is a term used in animal nutrition to refer collectively to components such as urea, biuret, and ammonia, which are not proteins but can be converted into proteins by microbes in the ruminant stomach.	Due to their lower cost compared to plant and animal proteins their inclusion in a diet can result in economic gain, but at too high levels cause a depression in growth and possible ammonia toxicity (microbes convert NPN to ammonia first before using that to make protein.) NPN can also be used to artificially raise crude protein values, which are measured based on nitrogen content, as protein is about 16% nitrogen, but, for example, urea is 47% nitrogen.	
Normal distribution	The bell-shaped frequency distribution graph that describes the variation in the characteristics in a population.		
Northern Australia	Queensland, the Northern Territory, Pilbara, and Kimberley regions of Western Australia.		
Northern Downs	Downs (naturally non-forested with black soil) areas of western Queensland, the Barkly Tableland, the Victoria River district and the Kimberley.		
Northern Forest	Non-downs areas, north of a line from approximately Bowen to Karratha.		
Oestrus or heat	The time of heat in the non-pregnant female when she will accept mating by the male.		
Opening numbers	Same as closing numbers from the previous year.		
Operating expenses	Expenses related to the operation and management of the business year to year, as distinct from finance costs, capital expenditure,		Business Edge course notes

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	taxation costs and owner expenses. Operating expenses consist of enterprise expenses and overhead expenses.		
Operating margin	The profit on each kilogram of beef produced (income per kg less cost of production).		Business Edge course notes
Operating return (also called return on assets)	[Total business EBIT/total assets under management] The profit of the business expressed as a percentage of the assets used to generate that profit (EBIT/total assets).		Business Edge course notes
Operating scale	The size of the beef business, expressed as the number of adult equivalents (AE) run.		Business Edge course notes
Opportunity cost	Cost of forgoing benefits that would have been available if the resources had been used in the next best alternative.		Business Edge course notes
Overhead expenses (also called fixed costs)	The general running costs of the business that are not directly attributable to an enterprise, e.g. administration, fuel, general repairs and maintenance, wages.		Business Edge course notes
Ovary	The female organ that produces the ova, or eggs.		
Palatable, unpalatable	The degree to which a grazing animal finds a plant attractive to eat; this can vary with the age of the plant or the type of soil it is growing on. Also influenced by what other plants are growing in the area.	WA DPIRD Rangelands glossary https://www.agric.wa.gov.au/rangelands/rangelands-glossary#rangeGLOSSP	
Parameter	Term denoting something that is measured.		

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Pasture growth	The amount of dry matter that a plant accumulates as a result of active growth during the growing season. Typically measured in kilograms of dry matter per hectare.		
Pasture yield	The total standing dry matter of a pasture. Includes pasture growth from the current season as well as any pasture still standing from previous seasons. Typically expressed as kilograms of dry matter per hectare.	Often used in forage budgets to determine the carrying capacity of a paddock for a specified time. Synonym for Total Standing Dry Matter (TSDM)	
Pasture types	A distinctive mix of plant species, soil type and landscape position easily recognised by landholders in a region. E.g. Mitchell grass downs, black spear grass country, ribbon grass alluvial plains.	WA DPIRD Rangelands glossary https://www.agric.wa.gov.au/rangelands/rangelands-glossary#rangeGLOSSP	
PCR	Polymerase chain reaction.	Chemical reaction that copies a segment of DNA defined by primers used in the reaction. About 35 sequential PCRs provide enough DNA for a test that differentiates whether the DNA sequence was present (positive) or absent (negative).	
PD round	The muster of a herd of breeding cattle for pregnancy diagnosis.		
Percentage foetal/calf loss	The percentage of cows diagnosed pregnant that either fail to wean a calf or were not found to be lactating after expected month of calving.		
Percentage points	When comparing the difference(s) between percentages for each measure of performance the absolute difference will be expressed in terms of percentage points increase or decrease.	For example, the median percentage foetal/calf loss was 8 percentage points higher in cows in the Northern Forest (13%) compared to cows in the Southern Forest (5%).	
Percentile	Demarcation point for a specified percentage of a population; e.g., 75 th percentile is the point below		

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	which there is 75% of the population or data of interest.		
Performance test	Method of evaluating an animal on its own phenotypic performance in relation to the phenotypic performance of other like-treated, or contemporary, animals.		
Perinatal	Within 48 hours of birth.		
Pestivirus	See BVDV.		
Phenotype	The physical characteristics of an animal that you can see, measure or assess.	The phenotype is the result of the genotype (genetic make-up) and environment.	
Phosphorous	Element, most of which is found in the body in cell membranes, the body's energy storage system, and in bone.	Dietary deficiencies of P cause decreases in feed intake on a positive plane of nutrition.	
Placenta	Structure in the uterus of the dam through which the foetus is nourished during pregnancy via the umbilical cord. It is expelled at birth (also called afterbirth).		
Plasma	Blood collected into an anticoagulant, with red and white cells extracted.	The supernatant that remains after centrifugation of heparinised or EDTA blood samples.	
Population attributable fractions	These are the proportional reduction in average risk of the outcome (e.g., mortality) that would be achieved by eliminating the effects of one particular factor, while leaving the effects of other risk factors unchanged.		
Postnatal	Beyond 48 hours after birth.		
Potential LTCC	See LTCC.		

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Pregnancy diagnosis	Diagnosing whether a heifer or cow is not pregnant (empty) or pregnant.		
Pregnancy rate	Percentage of cows in a management group (mob) that became pregnant within a one-year period.	For continuously mated herds, this included cows that became pregnant between September 1 of the previous year and August 31 of the current year.	
Pregnant within four months of calving (P4M)	Lactating cows that became pregnant within four months of calving, while lactating.		
Prevalence	The proportion of a population with a trait at a specific time point.		
Price received	Average price received (\$/kg LW) for all sales in that year.		Business Edge course notes
Production cycle	The period from the end of one pregnancy testing muster to the end of the pregnancy testing muster in the following year.	. Musters conducted to diagnose pregnancies were routinely conducted approximately 12 months apart.	
Production point	When there is a sufficient amount of nutrient-rich pasture to sustain liveweight gain in livestock and livestock are no longer relying on residual feed from the previous growing season.	Typically occurs 2-6 weeks after the Green Date (depending on location and soil type) if sufficient soil moisture is available.	Grazing fundamentals EDGE workshop notes
Profit	Profit = EBIT – tax – finance costs.	A dollar figure of the profit made by a business in a year.	Business Edge course notes
Profitability	The profit of a business expressed as a ratio of the amount of capital employed to generate it.		Business Edge course notes
Progeny test	Evaluation of an animal by examining the performance of its progeny, often used for comparing the breeding value of sires in terms of the average performance of each sire's progeny.		

NB2 glossary

Property-year	A collective term referring to females within a property that were recorded during a common annual production cycle. A synonym for herd-year.		
Protein	Large molecule built by DNA-RNA using amino acids that contain an average of 16% nitrogen by weight.		
Provisioning	Budgeting for or setting aside money for future expenditure, e.g. provisioning for asset replacement or establishing off-farm reserves to fund retirement.		Business Edge course notes
Puberty	Sexual maturity – signified by a successful ovulatory process whereby a corpus luteum is produced on an ovary.		
Pyometra	Pus-filled uterus as a result of infection.		
Q-fever	Infectious zoonotic disease caused by a bacterium-like agent. Harbours in female cattle reproductive tract, =and has been associated with sporadic abortion in cattle.		
Quartile	A range within which 25% of animals occur.		
Rainfall bursts	A burst event is an accumulation of rainfall over a threshold amount in a 3-day period e.g. 20 mm in 3 days.	. Bursts sustain summer pasture growth, allowing beef industry to exist across northern Australia's semi-arid tropics. First wet season bursts: used to define a green date, when there is sufficient new pasture growth for livestock foraging.	
Real terms	Comparison of a set of numbers, adjusted for inflation.	The comparison of figures in real terms allow the actual changes to be compared in constant dollars (ie dollars with the same purchasing power).	Business Edge course notes

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Reproduction	Replication of an independent living being. In cattle, the most commonly used end point is weaning.		
Reproductive wastage	Proportion of animals within a stage of the reproductive cycle that do not advance to a nominated subsequent stage. Most-commonly used for the percent of pregnant cows that fail to wean a calf.		
Research	Scientific discovery and assessment of new methods built on hypotheses and using biometrics.		
Restricted joining	See controlled mating!		
RFID	Radio frequency identification device. A sealed transponder that emits a unique number when energised by an external device such as that in a wand or panel reader.		
Rotational cross	A crossbreeding system which systematically uses three or more breeds and is self-regenerating.		
Safe pasture utilisation rate	The proportion of annual forage growth that can be consumed by domestic livestock without adversely affecting land condition in the long term.		Hunt, L. P. (2008). The Rangeland Journal 30, 305–315. doi:10.1071/RJ07058
Seasonal break	The 'Seasonal Break' or Northern Rainfall Onset occurs when enough rain has fallen to stimulate plant growth after the northern dry season. This is defined as the date when rainfall accumulated after 1 September reaches at least 50 mm.	The rainfall onset is especially significant for primary producers, including the agricultural and horticultural sectors.	

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Second-lactation cow	A cow between confirmed pregnancy and weaning in the year after the majority of her cohort weaned their first calf.		
Segregated breeding system	A system of segregating female cattle annually into calving periods, eg, before Xmas, in the months after Xmas, later, and non-pregnant.		
Selection differential	The difference between the mean of the selected parents for a trait and the mean of the population from which they came.		
Semen	The sperm and fluids produced in the testicles and other glands of the male's reproductive system.		
Semen quality	Attributes of semen, primarily percent motile and percent morphologically normal, that indicate fertilising capacity.		
Seroconversion	The production of antibodies detectable in serum as an indicator of acquired immunity.		
Seronegative	Denoting that a lab test for a serum component found a negative result.		
Seropositive	Denoting that a lab test for a serum component found a positive result.		
Seroprevalence	The proportion of animals that are seropositive.		
Serum	Fluid fraction of blood after extraction of red and white cells and clotting proteins. The supernatant that remains after centrifugation of whole blood.	The plural is sera.	
Sigmoid flexure	S-shaped bend of the penis located between the hind legs, immediately in front of the scrotum.		

NB2 glossary

Southern Forest	Non-downs areas outside the Brigalow country of central and southern Queensland.		
Spermatozoa	Sperm; the male gametes.		
Standard deviation	Statistic for a normally (evenly) distributed population whereby approximately two-thirds are within one standard deviation of the average and 95% are within two standard deviations of the average.		
Start of the wet season	See wet season onset.		
Steer	De-sexed bull prior to full maturity.		
Stocking rate	Stocking rate refers to the number of livestock on a paddock or a whole farm and is expressed as an indication of the number of a particular type of animal per unit area.	In northern Australia, the usual measure is hectares per adult equivalent (ha/AE) or adult equivalents per km ² (AE/km ²), however, this may also be expressed in terms of cattle per unit area, such as breeders (cattle) per ha or km ² .	
Stocktake	A computer program that assists in calculating forage budgets and long-term carrying capacity estimates.		
Straightbred	Animals of a particular breed as opposed to crossbred animals.		
Super-ovulation	Act of stimulating the ovary to produce more eggs than normal.		
Supplement	Addition to the diet to balance primary deficiencies, speeding up digestion, thereby increasing the rate of pasture or hay consumption, thus energy intake.		

NB2 glossary

Temperature-humidity index (THI)	Environmental comfort index calculated from ambient temperature (T: °C) and relative humidity (H: %). THI = $0.8T + H * (T - 14.4) + 46.4$		
Terms of trade	The difference between the price paid for inputs and the price received for outputs.	Over time in agriculture the terms of trade are declining at an average of nearly 2% per year, i.e. the price of inputs is rising nearly 2% more than the price of outputs.	Business Edge course notes
Three-day sickness	Common name for Bovine Ephemeral Fever.		
Three pillars	<ul style="list-style-type: none"> • Cashflow statement • Income statement • Balance sheet 	Combined, they give the full picture of business performance .	Business Edge course notes
Tick fever	Deadly disease caused by protozoan parasites (<i>Babesia</i> and <i>Anaplasma</i>) that damage red blood cells. Spread by cattle ticks. Infected young cattle are not affected and become immune.		
Time value of money	The principle that a dollar in your hand today is worth more than a dollar in x years' time, as today's dollar can be invested and generate a return in that time.		Business Edge course notes
Top 25%	The top 25% of producers ranked by profitability.		Business Edge course notes
Total business return (TBR)	[Asset appreciation + operating return]	The return from running and owning the beef business (operating return plus capital return).	Business Edge course notes
Total standing dry matter (TSDM)	Total standing dry matter is also called pasture biomass, yield, sward biomass, feed, and feed on offer. Typically expressed as kilograms of dry matter per hectare.	Synonym for Pasture Yield.	

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Traditional selection	Selection based on performance of the animals to be used for breeding the next generation of progeny.	Traditional selection strategies in animal breeding programs have been based on either selection by eye, phenotypic performance or the use of EBVs, which are determined from the statistical analysis of the performance of an individual and its relatives.	
Tree basal area (TBA)	The area of ground covered by tree trunks when the trees are measured 30cm above ground level. TBA is expressed as m ² /ha. Measured using a Bitterlich gauge.	Whilst forestry departments measure the trees at breast height for working out trunk volumes, the measure 30cm above ground level is used in the rangelands so that smaller trees are included, since they also affect pasture production.	Grazing fundamentals EDGE workshop notes
Trichomoniasis	Venereal disease closely resembling vibriosis, but caused by a protozoan parasite living in the prepuce.		
Ultrasound	A method of using high-frequency sound waves to non-invasively image soft tissue in the body.		
Uterus	The female organ in which the foetus develops during pregnancy.		
Vaccine	Injectable (usually) product that causes development of immunity against an antigen, usually an infectious disease agent.		
Variation	Measure of animal differences in a group or population.		
Vibriosis	The revised name is Campylobacteriosis, derived from the infective agent's scientific genus name, <i>Campylobacter</i> .	Infection of unvaccinated naïve females usually results in marked reduction in pregnancy rate but there may also be an increase in abortion rate. No clinical disease in bulls.	
Vigour	Superior performance.	Most commonly used in the context of hybrid vigour or heterosis, ie the amount by which the performance of the crossbred animals exceed (or differ from) the average performance of the purebred parents that are used in the cross.	

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Watered area	The area (measured in hectares or km ²) that falls within the watered area grazing radius.		
Watered area grazing radius	The distance away from water points within which the majority of grazing activity occurs.	This distance is determined by the need for livestock to regularly return to water points to meet their hydration needs. The watered area grazing radius recommended for infrastructure planning and grazing management varies from region to region and is influenced by factors such as climate, terrain, livestock class and paddock size.	
Weaner	Calf permanently prevented from suckling its dam at the end of the reproductive cycle.		
Weaner production	Lactation rate (retained cows) multiplied by average weaner weight.		
Weaning rate (mated cows)	Cows weaning a calf as a percentage of those mated the previous year.	Usually difficult to calculate as herd restructures and culling during pregnancy often prevent accurate information being available. Can be derived from multiplying annual pregnancy rate by (1- foetal and calf loss rate).	
Weight	Measure of body mass.	Can be very precise, but weight recorded will vary with different weighing protocols, especially diet and time since eating and drinking.	
Wet cow	Lactating cow or cow suckling a calf.		
Wet-dry round	A breeding herd muster when lactation status of cows, but not foetal age, is determined.	Usually the first muster of the year for branding and or weaning.	
Wet season onset date	When the rainfall total reaches 50 mm since the 1st of September.	It is considered to be approximately the amount of rainfall required to stimulate plant growth. Also known as the northern rainfall onset date.	Australian Bureau of Meteorology website
Working capital	The amount of funding you have at your disposal to carry on the running of the business.		Business Edge course notes

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Year group	Cohort of cattle.	In tropical Australia where calving peaks at the end of the year, the year group is the year in the second half of the financial year as it coincides with most branding; eg, calves born in 2012-13 are called the 2013 year group.	
Yearling	Animal approximately one year of age.		
Zygote	The product of the union of an ovum and sperm.		

The Cash Cow final report (McGowan *et al.* 2014) published a lexicon. The purpose of this was to provide a working definition for terms used in that report. It was not intended to represent a single “correct” definition for the various terms. Geoff Niethe has recently added some reproduction, genetic, business and statistical terms and edited some of the McGowan *et al.* (2014) definitions. Dionne Walsh provided most of the grazing land management terms and definitions.

McGowan MR, McCosker K, Fordyce G, Smith D, O’Rourke PK, Perkins N, Barnes T, Marquet L, Morton J, Newsome T, Menzies D, Burns BM and Jephcott S (2014) North Australian beef fertility project: Cash Cow. Final Report, Project B.NBP.0382, Meat and Livestock Australia, Sydney. <https://www.mla.com.au/research-and-development/search-rd-reports/final-report-details/Productivity-On-Farm/Northern-Australian-beef-fertility-project-CashCow/370>

McLennan S, McLean I & Paton C (2020) Re-defining the animal unit equivalence (AE) for grazing ruminants and its application for determining forage intake, with particular relevance to the northern Australian grazing industries. Final Report on project B.GBP.0036. Meat and Livestock Australia, Sydney