Glossary

Terms in this glossary are defined in the context of their use in this book.

abomasum: the fourth (or true) stomach in ruminant animals where feeds are digested using enzymes produced in the stomach wall.

acid detergent fibre (ADF): the less digestible or indigestible parts of the fibre; that is, the cellulose and lignin only.

acidosis: an excessive increase in rumen acid caused by feeding too much grain or other starchy feeds or by introducing them into the diet too quickly.

***ad lib* or *ad libitum*:** fed to appetite.

age at first calving (AFC): a good indicator of heifer management in year-round calving herds. In seasonal-calving herds, it is usually pre-determined at about 24 months of age.

AI: artificial insemination.

antibiotics: drugs, generally prescribed by veterinarians, that treat diseases by killing specific bacteria. Unfortunately, their use is becoming too prevalent in normal calf rearing, such as their inclusion in commercial milk replacers.

antibiotic residues: antibiotics remaining in animal products when sold for human consumption.

antibodies: protective proteins produced by animals in response to specific diseases. These are passed on to newborn calves through the colostrum.

Australian Milking Zebu (AMZ): a tropically adapted dairy breed developed in Australia based on a Jersey and Red Sindhi cross.

best management practice (BMP): a description of the most suitable procedures for undertaking a set of tasks and is the basis used to develop a checklist for planning various aspects of the calf and heifer operations. Basically it is 'saying what you should do, doing what you say, and then recording what you have done'.

biosecurity: the protocols introduced to minimise the introduction of diseases into the calf shed.

bloat: a condition caused by over distension of the abomasum or rumen, which requires immediate attention because it can quickly kill animals.

body condition: an estimation of stored body fat reserves. In Australian dairy cattle, it is estimated using a score from 1 (thin) to 8 (fat).

buffers: chemicals that prevent sudden changes in rumen pH.

Ca: calcium.

calving ease: a rating used when selecting dairy sires based on the estimated percentage of calves born to a particular sire that cause calving difficulties in mature cows.

calving interval (CI): the average time period between consecutive calvings in a dairy herd. The target is 12 months, although this is rarely achieved.

***Clostridia*:** bacteria causing a variety of diseases in calves and older cattle.

CMR: calf milk replacer.

***Coccidia*:** microbes, called protozoa, which cause scouring in calves.

colostrometer: a device that measures the level of immunoglobulins in colostrum. It is sometimes called a colostradoser.

colostrum (or beastings): the milk produced by cows for the first two milkings post-calving, which contains high levels of nutrients and immunoglobulins for transferring immunity onto newborn calves.

comfort zone: the range of air temperature when there is no measurable fluctuation in physiological processes of cattle.

conception rate: the proportion of the total number of services or inseminations that results in pregnancy.

conception to calving interval (CCI): the time period between when a cow has a calf and she next becomes pregnant.

contract heifer rearing: when dairy producers develop formal agreements with other graziers to grow out their heifers, usually at a pre-determined growth rate, until the point of calving.

controlled internal drug release (CIDR): intravaginal progesterone implants used to synchronise oestrus to better manage artificial insemination programs.

critical period: the period of a heifer's growth during which time the mammary tissue develops in the udder. During this period, which occurs around puberty, excessive growth or very low protein diets can lead to fatty tissue being deposited, instead of milk-producing tissues.

crude fibre (CF): a measure of fibre in the diet, now considered unacceptable because it does not always take into account all of the constituents that make up the fibre component of a feed; it measures only the alkali-soluble lignin and the cellulose.

crude protein (CP): a measure of the total protein in a feed, calculated as the total nitrogen content multiplied by 6.25. It includes true protein, which provides the amino acids for animal growth, and also non-protein nitrogen, such as urea.

***Cryptosporidia*:** microbes, called protozoa, which cause scouring in calves.

degradability: a measure of the degree of breakdown of dietary protein by rumen microbes.

dehorning: removal of small horns and horn buds in calves more than 2 months of age.

digestibility: the proportion of the dry matter in a feed that gets digested; it is the difference between what is eaten and what comes out as manure.

disbudding: removal of horn buds in calves younger than 2 months.

DPI: Department of Primary Industries (Victoria).

dry matter (DM): the proportion of a feed remaining after being dried at 80–100°C for 24 hr or until a constant dry weight is achieved. The nutritive value and the livestock requirements of feeds are usually expressed on a dry matter, rather than a fresh weight, basis.

duodenum: the first section of the small intestine.

dystocia: the technical term for calving difficulties, which are more common in first-calf heifers than in older cows.

***E. coli*:** bacteria that cause scours in calves.

electrolytes: mineral salts used to alter the pH of gut contents for optimum digestion. Electrolyte solution is a solution of salts (and often an energy source, such as glucose) used to replace fluids lost during scouring.

enzymes: chemicals produced by animals that assist with the breakdown of feeds in the digestive tract; examples are pepsin, lactase, rennin, lipase and galactase.

fatty udder syndrome: excess deposition of fatty tissue in the developing udder, which can reduce lifetime milk production. It can occur if heifers grow too fast (greater than 0.8 kg/day) prior to puberty, say between 3 and 10 months of age.

fibre: the cell wall, or structural material, in a plant. Fibre is made up of (among other things) cellulose, hemicellulose and lignin.

five in one: a vaccine used to protect against *Clostridia* bacteria.

flight zone: the 'personal' space around animals where they will attempt to move away from people.

heifer farms: a new initiative in many Asian countries in which calves are collected from individual farms and group reared in one location prior to their return to that farm just prior to calving down.

immunoglobulins (Ig): blood proteins (antibodies) in colostrum that pass on passive immunity to newborn calves.

Johne's disease: an incurable bacterial infection of the intestines. Heifers are highly susceptible up to 12 months of age, so must have no contact with mature animals or their faeces. This means that calves must be reared in complete isolation from milking cows and weaned heifers must only graze 'clean' paddocks for their first year of life.

joint-ill (or navel-ill): a bacterial infection of the umbilical cord in newborn calves that can cause arthritis of the joints.

key performance indicator (KPI): a numerical descriptor of some aspect of well-managed farm or herd performance that can be used as a realistic target for future improved farm management programs.

leptospirosis: a bacterial disease that is prevalent among dairy farmers due to its transmission from cows and calves.

live weight at first calving (LWFC): the live weight of heifers just before their first calving. In some instances, live weights may be recorded post-calving, in which case they will be about 80 kg lower than in-calf LWFC.

lower comfort zone temperature: the air temperature at which the energy intake must increase to minimise reduction in weight loss in growing cattle or to prevent weight loss in mature cattle.

medicine disease: a condition caused by prolonged use of antibiotics, which can upset the balance of rumen microbes.

metabolisable energy (ME): the amount of energy provided by a feed after deducting energy lost to faeces, urine, heat and gas production; it is the energy available to be used by the animal for its metabolic activities.

microbial protein: an important component of the microbes in the rumen, which is broken down into amino acids for use by the animal.

MJ ME/kg DM: megajoules of metabolisable energy per kilogram of dry matter.

MR: Malaysian ringgits.

N: nitrogen.

neonatal diarrhoea: the technical term for calf scours.

neutral detergent fibre (NDF): a measure of all the fibre (hemicellulose, lignin and cellulose) in a feed; it indicates how bulky the feed is.

non-protein nitrogen (NPN): not actually protein but simple nitrogen; however, microbes can make protein from simple nitrogen if enough energy (carbohydrates) is available in the rumen at the same time.

nurse cows: cows used for multiple suckling calves, either by running with them at pasture (continuous or foster suckling) or by holding them in specially designed races (restricted or race suckling).

oesophageal groove: a small channel in the rumen wall controlled by muscles, which allows liquid feeds to bypass the rumen for digestion directly in the abomasum.

P: phosphorus.

pancreas: an organ that produces enzymes to assist with digestion of milk products.

passive immunity: resistance against diseases passed from cow to calf via the immunoglobulins in colostrum. It is also called acquired immunity.

pellets: commercially produced and pelleted mixtures of feeds specially formulated for rearing calves or feeding specific types of livestock. They are generally based on cereal grains and other concentrates, but can also include agro-industrial by-products. They generally include specific mineral and vitamins.

pH: a measure of acidity or alkalinity on a scale from 1 (extremely acid) to 14 (extremely alkaline).

PKC: palm kernel cake.

probiotics: additives, usually bacteria, to improve the natural process of digestion.

pyloric sphincter: the valve at the end of the abomasum that controls the movement of feed into the duodenum.

(the 3) Qs: the targets for colostrum feeding management, namely quality, quantity and quickly.

quality: in relation to feeds, it is an indication of the level of energy and digestibility. In relation to milk, it refers to the level of various contaminants in milk, such as bacterial, chemical or any other adulterations that can be detected.

quality assurance (QA): a structured set of best management practices.

retained foetal membrane (RFM): membranes from newborn calves still inside the cow following birth.

rotavirus: a type of virus that cause scours in calves.

Rs: Sri Lankan rupees.

rumen: the major stomach in adult ruminants containing millions of microbes that breakdown feed particles prior to digestion by the animal. It is underdeveloped and non-functional in newborn calves.

rumen degradable protein (RDP): the portion of protein in the diet that is digested and used by the microbes in the rumen to build themselves, if enough energy (carbohydrates) is available at the same time.

rumen undegradable protein: *see* undegradable dietary protein.

***Salmonella*:** bacteria causing severe scouring in calves. These can also be transmitted to humans.

SHD: small holder dairy.

springing cow: a cow due to calf imminently.

standard operating procedures (SOP): a set of instructions for any activity or set of tasks undertaken on the farm.

starter: a name given to the first type of concentrate fed to calves during milk rearing.

submission rate: the proportion of the herd inseminated at least once in a given period of time (e.g. the first 10, 21, 24 or 30 days of mating).

supplement: a feed or product added to an animal's diet to increase the intake of some dietary component, such as energy, protein, fibre, vitamins or minerals.

target live weights and wither heights: pre-determined live weights or wither heights at certain ages, set as targets for growing heifers. Because they are targets for all heifers to achieve by a given age, they are minimums not average growth targets.

temperature humidity index (THI): a system for quantifying heat stress based on temperature and humidity. The higher the index, the greater the discomfort. This occurs at lower temperatures for higher humidities.

tender loving care (TLC): the term used for calf rearers with sufficient empathy towards calves to ensure they place close attention to their daily needs and management.

transition milk: milk from freshly calved cows (following colostrum) that milk processors will not collect for the first few days post-calving. It is usually (and incorrectly) referred to as colostrum.

undegradable dietary protein (UDP): dietary protein that escapes microbial digestion in the rumen and is broken down by the animal in the abomasum or duodenum.

VND: Vietnam dong.

wastage rate: a measure of losses in replacement heifers between birth and second calving.

WATCH: this summarises the key principles of good cleaning and sanitising of calf feeding equipment: namely water, action, time, chemicals and heat.

wither height: the height of heifers measured at the highest point on the shoulders, just above the front legs. Wither height is a good measure of bone growth in heifers, hence frame size.

withholding period: the number of days following drug administration before milk or meat can be sold from treated animals.

XB: crossbred.

zoonoses: calf diseases that can be passed onto humans.