

Glossary and abbreviations

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

A

acetate or acetic acid. A product of rumen digestion, produced in the main by cellulose-digesting bacteria; important in the production of milk fat.

acid detergent fibre or ADF. The less digestible or indigestible parts of the fibre; ie 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 libitum. Fed to appetite

Animal Production Level (APL). A measure of the level of performance of a cow calculated as the energy requirements expressed as a proportion of maintenance energy requirements.

amino acid. The building block of proteins; a cow requires 25 different amino acids for normal metabolic functioning.

appropriate technology. A term developed to describe practical solutions to problems that could be readily accepted hence undertaken by farmers, particularly traditional ones with minimal resources.

as-fed. Feed with its moisture still in it.

associative effects. Changes in utilisation of one feed type following supplementation with a second feed type, such as decreasing digestibility in forages with increasing supplementation with concentrates. This means that assuming additive effects of supplements can overestimate milk responses.

Australian Friesian Sahiwal (AFS). A tropically adapted dairy breed developed in Australia based on Friesian and Sahiwal.

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

B

body condition. Energy stored in body reserves by cows, predominantly as fat.

buffer. Body fluid (eg., saliva) or feed additive that reduces the acidity in the rumen.

butyrate or butyric acid. A product of rumen digestion of lesser importance in milk production than acetate and propionate.

bypass protein. See undegradable dietary protein.

C

°C. Degrees Celsius.

Ca. Calcium.

carbohydrates. The main source of energy in a cow's diet.

carnivore. Meat eater.

casein. Milk protein.

cellulose-digesting bacteria. Type of rumen microbe that can be eliminated or severely slowed in growth rate by high-fat diets or high acidity in the rumen.

Cl. Chloride.

cm. centimetre.

Co. Cobalt.

colony farming. A term used in Indonesia to describe a system of dairy farming where many small holders house their stock in large sheds but still maintain independent feeding and herd management.

conception rate. The proportion of the total number of services or inseminations that result in pregnancy.

condition score. Objective visual assessment of a cow's body condition on a scale of 1 (emaciated) to 8 (obese).

correction factor. A factor used to adjust the total energy requirements for the level of cow performance, using the Animal Production Level.

crude fibre (CF). A measure of fibre in the diet now considered unacceptable as 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 rough measure of all the protein in the diet (NPN + RDP + UDP); it assumes (incorrectly) that all the nitrogen in a feed comes from protein.

Cu. Copper.

D

d. day.

DDM. Digestible dry matter.

DE. Digestible energy.

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.

digestible energy. Energy that is actually absorbed by the cow.

dry matter or DM. The proportion of any feed remaining after all the water has been taken out.

E

energy. The part of a feed that is used as 'fuel' in carrying out the cow's bodily functions.

energy-dense. Having a large amount of metabolisable energy per kilogram of dry matter.

enzyme. A substance produced by the cow that helps digestion.

eructation. The belching of gases produced in the rumen during carbohydrate fermentation.

essential amino acid. Any of the 10 amino acids that the cow cannot make herself and therefore must be supplied from the diet or from the products of digestion.

F

Food and Agriculture Organization of the United Nations (FAO). The organisation within the United Nations structure that documents agricultural statistics and facilitates development in agriculture, particularly in the poorer countries of the world.

Fe. Iron.

fbre. The cell wall, or structural material, in a plant made up of (among other things) cellulose, hemicellulose and lignin.

G

g. gram(s).

g/d. gram(s) per day.

g/L. gram(s) per litre.

Good Agricultural Practices (GAP). Recommended farming practices to minimise problems of on-farm contamination of livestock products which reduce consumer safety.

H

hemicellulose. The most digestible part of fibre; included in NDF analyses but not in ADF or CF analyses.

herbivore. Plant eater.

hormone. A chemical produced by the cow that regulates body functions.

I

I. Iodine.

international units (IU). The unit of measure used for vitamins.

J

joule. A unit of energy; one calorie equals a bit more than 4,000 joules.

K

K. Potassium.

kg. kilogram(s).

kg DM. kilogram(s) of dry matter.

km. kilometre(s).

L

L. litre(s).

L/d. litre(s) per day.

lead feeding. Gradual introduction of cereal grain to cows just before calving

lignin. An indigestible part of plant fibre.

live weight (LWT). Weight of live cow, measured in kilograms.

LWG. Live weight gain.

local currency units (LCU). Units of currency used in different countries (see Appendix 3).

M

maintenance requirement. The energy needed for essential body functions, such as blood circulation, breathing, keeping warm or cool, digestion, and tissue repair.

marginal. The change in output per unit change in input, for example, marginal milk response is the change in milk yield per kg DM intake, for the next kg DM consumed

mastication. chewing.

metabolic activities. For an adult cow, maintenance, milk production, activity, pregnancy, and weight gain; for an immature cow, also growth.

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 cow for her metabolic activities. *See also* digestible energy.

metabolism. A general term for all chemical activities of living organisms; it includes respiration, fermentation, and repair of body tissues. *See also* metabolic activities.

Mg. Magnesium.

mg. milligram(s).

mg/kg. milligram(s) per kilogram.

mg/kg DM. milligram(s) per kilogram of dry matter.

microbes. Microorganisms that live in the rumen and digest dietary forages

Milk income less feed costs (MIFC). A measure of profitability calculated from the income from milk sales less the total cost of feed inputs

MJ. megajoule(s), millions of joules.

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

mm. millimetre.

Mn. Manganese.

Mo. Molybdenum.

Multiple ovulation and embryo transfer (MOET). A reproductive management practice to increase the number of calves produced from high genetic merit dairy cows.

N

N. Nitrogen.

Na. Sodium.

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

NH₃. Ammonia.

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

P

P. Phosphorus.

partitioning. The metabolic division of energy intake (above the maintenance requirement) between live weight gain and milk production.

per. In each or for each.

per cent. In or for each one hundred; for example, 5% means 5 in (or for) each 100: if the interest rate on a loan is 5% per year, you pay \$5 a year for each \$100 not yet repaid, or if the dry matter per kilogram is 5%, then 50 grams in each kilogram (1,000 grams) is dry matter.

percentage. The rate or proportion per hundred.

peri-urban farms. Farms located on the outskirts of large towns and cities, benefiting from close proximity to consumers hence markets, as well as being able to easily source forages in nearby rural areas and agro-industrial by-products from urban food processors.

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

ppm. parts per million; equivalent to milligrams per kilogram.

probiotics. Compounds and micro-organisms that improve feed digestion and utilisation.

propionate or propionic acid. A product of rumen digestion, produced in the main by starch-digesting and glucose-digesting bacteria; important in milk volume and milk protein production. *See also* propionic acid.

protein. The material that makes up most of the cow's body (muscles, skin, organs, blood); it also is part of milk.

Q

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.

R

R, D and E. An abbreviation for research, development and extension.

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 (carbohydrate) is available at the same time.

rumen modifier. A product that changes the rumen conditions and/or microbes and thereby changes the fermentation process and the products of fermentation.

rumen undegradable protein. *See* undegradable dietary protein.

rumination. Regurgitation and chewing of the cud.

S

S. Sulfur.

Se. Selenium.

soluble carbohydrates. Include the sugars and simple carbohydrates, which are quickly dissolved and digested in the rumen, produce mainly propionate, are non-fibrous, and are found within the plant cell.

Solids-not-fat (SNF). An alternative measure of milk composition to milk protein. SNF contains milk protein, lactose and minerals, allowing milk protein percentage to be calculated as (SNF% [-] 5.4).

South-East Asia (SE Asia). The countries in this region of Asia, namely Cambodia, Indonesia, Laos, Malaysia, Myanmar (or Burma), Philippines, Thailand and Vietnam.

storage carbohydrates. Include starch, are quickly dissolved and digested in the rumen, produce mainly acetate, are non-fibrous, and are found within the plant cell.

structural carbohydrates. Include lignin, hemicellulose, and cellulose; are dissolved and digested slowly (if at all) in the rumen; are fibrous; and are found in the cell wall.

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

substitution. The extent to which a supplement replaces forage in the diet.

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

T

Temperature Humidity Index (THI). A system for quantifying heat stress based on temperature and humidity. The higher the index, the greater the discomfort, and this occurs at lower temperatures for higher humidities.

Total Digestible Nutrients (TDN). A system of describing dietary energy based on proximate analyses (ash, nitrogen, ether extract, crude fibre). Formula uses crude protein, crude fibre, ether extract and nitrogen-free extract.

Total Plate Count (TPC). A measure of bacterial contamination of raw milk in millions of bacterial colony forming units per millilitre of milk.

Total Solids (TS). A measure of milk composition expressed in percentage of total milk solids (milk fat, milk protein, lactose, minerals).

transition period. The five-week period between three weeks prior to and two weeks after calving when feeding management can have a large influence on cow health and productivity in early lactation.

U

undegradable dietary protein (UDP). Any protein in the diet that passes through the rumen without breaking down and is digested in the abomasum and small intestine. Also bypass protein.

ultraviolet light (UV). Radiation from the sun which can rapidly deteriorate silage plastic.

V

volatile fatty acids (VFA). The general term for the products of rumen fermentation; the most important of these acids are acetic, propionic and butyric acids, which are major energy sources for the cow.

Z

Zn. Zinc.