



Information Sheet 6

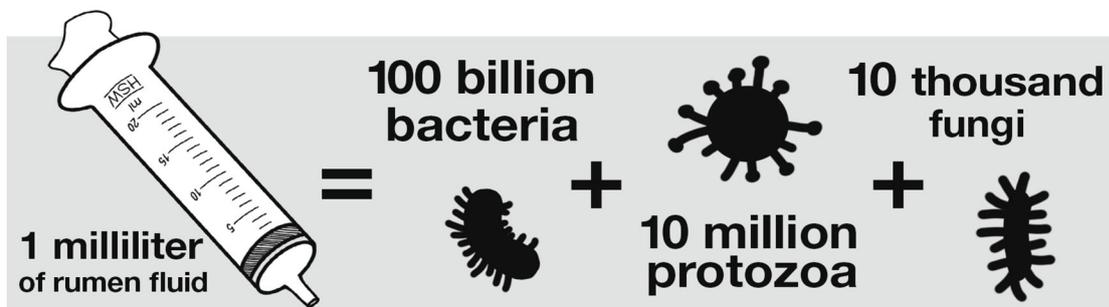
Animal Grazing Nutrition

Summary

- Consistent nutrient intake and diet are important to animal performance and wellbeing.
- Nutrients, the basics – fibre, energy, protein, minerals and vitamins.
- Balancing pasture and animal requirements.
- Buying feed – beware of bringing weeds on to your property.
- Buying feed – understand the feed and nutrient requirements, and buy what is needed.

Consistency of diet

Grazing animals and grasslands have co-evolved, so when an animal is exposed to a diet of vegetative, recovered and diverse species of pasture that is relatively consistent each day, the animal (and importantly, their gut microorganisms) will be healthy. But grazing that occurs on plants that have not reached vegetative leaf maturity will not be as healthy to the animal. Previous information sheets have identified that grazing which is beneficial for the grazing ecosystem is also beneficial for the soil and for the grazing animal. What is implicit and absolutely critical for the animal is a consistent diet. When the grazing animal is moved – ideally daily – to a fully recovered area of the property, the animal will consume a very similar diet each day.



The gut/s of grazing animals have billions of gut microorganisms of various types, which each break down various components of the consumed feed.

The microbes within an animal which has a consistent diet are in balance and work to optimise the extraction of nutrients from the feed for the animal. When the diet changes, the microbes within the gut need to change composition. For example, when a grazing animal is suddenly given grain mix, the microbes that efficiently break down the grain are in small numbers and need time to multiply to efficiently convert the grain to nutrients for the animal. If the grain amount is too much for the small number of 'grain microbes' to cope with, a change in pH can occur, which in turn can result in a change in the microorganism composition. This pH balance change can be minor, resulting in a virtually undetectable gut upset, or a major pH change resulting in a very unhealthy animal requiring veterinary assistance or death.

Changing diets is not just limited to supplementary feeds such as grain; the introduction of hay requires a change in microbe balance. Although this is rarely as dramatic as overfeeding grains, a large amount of hay



fed quickly can mean the feed is not broken down efficiently within the gut. This can result in nutrients that could have been used by the animal being wasted and passed through it in its faeces. Animals can lose weight even if the feed is sufficient for their needs, just because the microbe balance has not corrected for the change in diet.

An inconsistent diet can also occur for grazing animals even in the absence of supplementary feed. It mainly occurs when animals have time and/or area to selectively graze. An example is when an animal is moved into a new large paddock to graze. It will firstly selectively graze the most palatable vegetative plants and avoid any fibrous material. If the animal is allowed to, it will re-graze the previously selected plants, again decreasing the overall fibre in the diet and resulting in a pH change in the gut/s. The most common example is when animals are rotationally moved at the start of spring onto fresh spring pasture growth.

Consistent nutrient intake and diet are important to create a stable gut environment so the microbes can extract the nutrients to aid animal performance and wellbeing.

Feed basics

The focus in previous information sheets has been on the transfer of solar energy into plant energy that is then transferred to the soil and the grazing animal. A grazing animal (the microbes, really) requires more than just energy – it also requires protein and fibre (with minerals and vitamins) in a formula that combines to form a stable environment in the gut for a healthy animal. The dry part of the feed, termed, dry matter (DM) contains the feed’s nutritional value. When comparing feed, for energy or protein for example between, pasture: grain: hay, this is done on a DM basis.

Energy is important for the animal’s bodily processes and can be stored as body fat.

Protein builds the animal’s tissues, organs and muscle. It is important for milk in lactating animals and muscle (meat) production.

Fibre is important for gut health through the action of chewing it to produce saliva (buffering pH in the gut) as well as its function of rubbing against the gut and intestinal walls. In cattle, it has been found that some of this fibre needs to be 5–10 cm long to assist rumen function.

Animal nutrition is a specialised field and balancing the nutritional requirements for your animals can become complicated. The most important aspect is to observe the animal’s behaviour, weight gain/loss, appetite, manure score, gut fill and rumen score.

The manure produced is a sign of the function and health of the gut (and gut microbes). The picture illustrates sheep (left) and cattle dung (right). Observing the manure of your stock is a powerful tool in assessing animal health. (diagram provided by G.Hand.)

A **rumen score** is assessed by observing the area on the left side of cattle, between the ribs at the front, the vertebrae at the top and hook

SCORE 1		SCORE 1		Food moving too fast through the rumen. HEALTH RISK
SCORE 2		SCORE 2		
SCORE 3		SCORE 3		GOOD animal performance. GOOD animal health.
SCORE 4		SCORE 4		
SCORE 5		SCORE 5		Pasture high in fibre, low in protein. Good animal health, lower animal performance

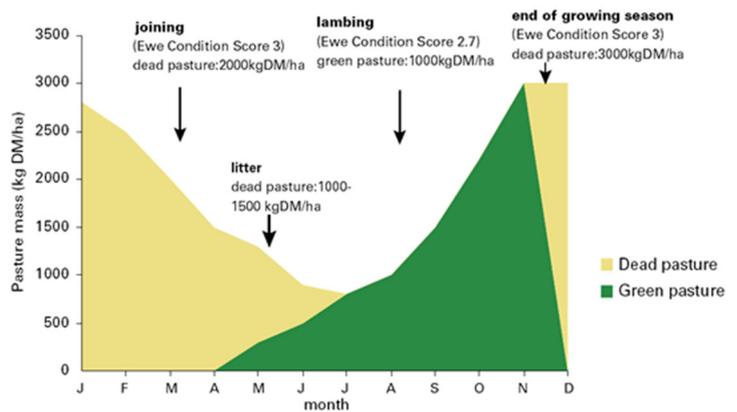


bone at the back. This score can guide in the rates of digestion and speed of the feed through the rumen. It can also give an indication on protein and fibre balance.

For more details, see https://www.publish.csiro.au/ebook/chapter/9781486301614_Chapter6

Annual plan–pairing pasture growth to animal intake

The balancing act of the amount of pasture grown to the amount required by the grazing animals is dynamic and changing. On an annual basis, a traditional method is to match the highest feed demand time to the highest growth. For example, a lactating animal usually has its greatest demand for feed 6-8 weeks after giving birth; therefore, match this with the spring or autumn flush of pasture (see Meat & Livestock Australia graph as an example). In some cases, animals may also be fed beyond these fundamentals and maybe to a riskier position to achieve higher market prices. A clear understanding of how rainfall events and management decisions such as weaning and stock sales will impact on overall pasture capability is key to risk management and the performance of a property.



When managing the pasture grazing regime well, and a shortfall in feed is predicted, the choice is to purchase supplement feed (i.e. grain, hay) or decrease the number of animals (i.e. trade, agist out, lease land etc). In times of surplus pasture growth, feed can be conserved as hay or silage or as standing paddock feed or used to feed an increased number of animals (i.e. trade or agist in). Planning and having clear trigger points for timely decision making is essential. This is where grazing is not a recipe, but requires thought, knowledge and observation.

Daily plan–pasture allocation to animal intake

In managing your feed grown from the grazing ecosystem, no one is able to get it right all the time – surpluses and deficiencies will occur. Managing these events will result in consequences that can be short term (stock weight loss) or long felt (loss of perennial pasture species). **The key is to understand that the pasture has no idea how many animals it needs to feed.**

Daily allocation is always understanding the grazing fundamentals outlined in Information Sheet 4. The daily allocation of pasture is an equation of how much area you have to graze on the property



divided by the recovery time required with a few knowledge-based tweaks. So, for example, a 40-hectare property has 32ha of grazing area (8ha is used for tracks, house and native tree plantations). The pasture



recovery is assessed as 115 days (by observing level of leaf maturity of the pasture). $32\text{ha} / 115\text{days} = 0.28\text{ha}$ allocation per day. Tweaks can occur to this 0.28ha allocation by:

- Better paddocks - better paddocks are assessed as being better because they have more feed in them, so a small allocation is given to maintain a similar animal intake each day, ie 0.22ha
- Poor paddocks, have less feed, hence a larger area allocated ie. 0.34ha.
- Paddock size – not dividable by allocation ie. 1.5ha paddock divided by 0.28 equals 5.5 feeds (do you give them 6 feeds or 5?)
- Position of water and/or shelter.

Then, using observation **every day**, holistically balance the animals' feed requirements (ie. gut fill, animal behaviour, etc.) against the optimum post-grazing residue. It is important to observe pasture regularly to inform decisions regarding pasture shortfalls or excessive surpluses as this means you act in a timely manner. Timely decisions around an approaching shortfall of feed, such as the slow introduction of supplements to maintain consistency of diet as described above, or selling stock which results in less need for supplements, means less stress to all – farmer, animal, plants and soil! Remember, increasing the area the animals have to meet their needs results in a shorter pasture recovery time, meaning less feed is grown, a negative spiral.

Buying feed

There are usually two main motives for purchasing supplementary feed.

1. To meet a shortfall in available feed. ie. growth of feed is less than what's required for the animals being fed.
2. To complement the feed you have on hand. ie. standing dry summer feed is not being efficiently utilised due to a lower than adequate amount of protein and/or energy. Therefore, make a purchase based on protein and/or energy so as the animal gut flora can efficiently use the stand feed.

In purchasing feed, it's important to consider:

- Containments - such as weeds are often imported on to properties through feed.
- The particular feed requirements (energy, protein, fibre, minerals and vitamins) of the animal and which you believe to have a shortfall.
- Consider the labour required to feed out the supplement. ie. grain to be fed daily to maintain gut balance.
- Equipment required for storage and feed out.
- Consider if the feed increase the animals demand for drinking water and can that water be supplied.
- Wastage rate for the chosen feed i.e. a round bale of hay, plonked in a paddock, can have up to 90 per cent wastage.
- Purchased feed has embedded nutrients hence can be also termed fertiliser for the soil. If you purchase feed (even if you are feeding out your own hay), nutrients are transferred. Thought should go to which areas the feed should be feed out, with an understanding of the nutrient transfer. Example include feeding out on low fertility parts of the property or feed away from water courses. The action of animals milling around the supplement feed and pooping and weeing, transfers nutrient from parts of the paddock that they have grazed.



- Feed testing is an option (based on quantities being bought) as the variance in quality of grains, hay and silage is enormous and is not really possible to identify quality without a feed test.
- Generally, silage, if made properly, is better than properly made hay, due to the plant material used in making the stored feed. There is an environmental cost of the plastic being used. Specific recycle centres are available for used baled silage wrap, but it must meet recycle standards.
- Be aware that hay slowly deteriorates over time. Silage needs air to be excluded to maintain feed quality. Individually wrapped silage bales, can, after a year or so, start letting in air, so cannot be stored for extended periods of time (unlike a drought reserve silage pit covered and placed underground in a metre or so of soil).

If shortfalls regularly occur at a similar time each year, think about altering your feed demand, by decreasing numbers or by altering calving/lambing. Alternatively you could look at higher risk options of sowing crops ie a winter mixed crop, or in summer a C4 mixed crop. Some properties use summer crops as part of their holistic management in creating or placing these crops close to important infrastructure (family home) as part of their bushfire plan.

In short, if you need to buy feed, buy what you need, a quality product that will balance the feed you currently have in the paddock and you have thought through the options and do not just buy what is cheap.

For more information, email environment@mrsc.vic.gov.au or call 5422 0333.