

RGA Pretty Pine Livestock Management and Research Information Day

4/7/12

Ruminant Nutrition – Brian Cockroft, CRC Agrisolutions

Basic Digestive Anatomy and Function:

Understanding ruminant requirements and how to meet them

Ruminants are able to utilise, otherwise unusable, poor quality feeds due to ability to ferment and convert. They have no digestive enzymes, only microbes such as bacteria and fungi to process the feed – so feed the bugs before the cow.

Reticulum / Rumen. Byproduct of the stomach bugs is volatile fatty acids. Saliver buffers the pH in the rumen, otherwise it would be too acidic for bugs to survive. There are 5 broad nutrient requirements for ruminants;

- Water
- Protein, amino acids / NPN
- Carbohydrates structural (cellulose) and non-structural (sugars and starches)
- Minerals
- Fat (annual pastures have up to 6% fat)

Plant components are digested to produce;

- Volatile fatty acids – acetic, propionic and buturic
- Proteins, microbial amino acids, plant amino acids
- Fat, fatty acids, triglycerides
- Carbohydrates – glucose

ME with new pasture will be higher than 1-2%, 11-13%.

Sugars higher in pasture in the afternoon, that's why better for hay / silage after plant photosynthesis. Plant uses sugars during the night. Best to have grains, hay, straw with new pasture as microbes will be adapted to this, and won't have to wait for the microbial adjustment period.

NPN used to convert into protein.

Partitioning of feed energy	Grain	Straw
Gross energy	18%	18%
<i>Digestability</i>	90%	40%
Digestable energy	16.25%	7.2%

Metabolisable energy

To work out energy requirements of a cow, is weight divided by 10% + 10. E.g. A 600kg cow is 60+10 =70 kg for maintenance. To gain 1kg weigh cattle need 35-45 mj ME.

- Young cattle lay down more protein (muscle) than fat, so energy demand is greater for growth than mature cows.
- In hot or very cold weather animals will use more energy.

As lambs age they deposit more fat than protein.

Energy for Reproduction

NPN licks are good for ammonia – It is converted to microbial protein, then to peptides, and amino acids.

- Energy is needed to drive microbial true protein (MCP)
 - 12 ME is required for growth of 100g of MCP
- Energy and protein need to be balanced
- Fast growing animals need faster converting. Cotton seed, cotton meal, lupins etc. good.
- Always compare feedstuffs on a dry matter basis for budgets. Costs mje or costs true protein.

NDF – can they eat it? What an animal can eat determines intake. Cattle can eat 1.2% of their body weight in NDF. NDF Intake = 600kg cow x 1.2% = 7.2kg NDF.

There are changes to the chemical composition of pastures as they mature.

Balance dry matter intake with rumen health. Too much fibre will limit intake, but too little fibre will cause rumen health issues.

Setting up a Reproductively Efficient Cow Herd

Ian Locke, Wiluna Poll Hereford Stud, “Spring Valley” Holbrook.

Trick is to know which stock to put where. Feed the growing stock and spread the rest out.

- Property has a Phalaris and sub clover base.
- Important to have pastures that thrive. Rotational grazing used to recover grass.
- In Holbrook 80% of feed is produced in spring months.
- Need to manage stock to take advantage of feed. Calving occurs at the start of spring so calves putting on weight to take advantage of the spring pasture (putting hay on their back).
- Weaning occurs at 5-6 months. Cow energy requirements when calving and weaning also, so have feed. Weaning complete when going into winter feed gap time. Cows loose half to one kg/day in June / July.

What are the profit drivers in a beef herd?

- Lift productivity

- Cost control – min. supplementary feeding / labour efficiency.
- Animal health – avoid snake oil salesman. Supplements can cost thousands \$/tn and not needed if energy and protein balanced and there is a salt / mineral lick provided.
- Risk Management – Early weaning. Split cow and calf otherwise cow picks best stuff from experience. Put calf on best pasture and cow on poorest. Fodder reserves, shock absorbers – sell in drought / wool to prime lamb. E.g. if change from weathers with wool to prime lamb, loose shock absorber because not spreading risk.

Stocking Rate dependent upon;

- Genetics and environment
- Pastures and pasture utilisation
- Attitudes of management
- Match to season, calving times etc.
- Match feed supply with feed demand

	Autumn	Spring	Calving herd
COP \$/kg	0.93	0.68	0.25

Need to get 0.25c/kg more for animal in autumn than spring to cover costs or not worth it.

Weaners don't look as good as autumn calvers but more kgs because autumn calvers loose condition when there is no feed in winter, therefore more supplementary feed costs, or lower the stocking rate.

Steer turn off time: Turn steers off after they consume most of the food available. Why sell as weaners if you have a lot of high quality feed. Benchmarking says 14-18 months is the best time to turn off steers.

- Set milestone targets. Only supplementary feed when targets are not met. Price of supplement may be more than weight gain is worth, so have maintenance feed or set back and feed in spring. They can catch up (only allow 7% of body weight reduction though or will be to the detriment).

1998 – farm produced 9.7 million kg dry matter

	Annual pasture	autumn	winter	spring	silage
Cost c/kg DM	3.4	4	6.9	2.1	13

3 x cost in winter vs spring, so grow out and fatten stock in spring.

An efficient herd should be;

Feed efficient

- Keep herd young – feed efficient
- Ride condition score roller coaster

Fertile;

- Test fertility of bulls
- Easy calving cattle
- Reproductive rate

Herd Structure

- Young in age, get genetic gain - productive, efficient. Less energy required with young stock compared to old.
- Optimises inventory value

Mating

- Heifers joined 14-15 months to calve as two year olds.
- Tight calving spread. Mate for six weeks only.
- Cow must also rejoin in a six week period. Some people think 6 week heifer joining time and nine weeks for cows, but don't need to have inefficient cows in the system.
- Should be live unassisted birth at two years.
- Retain at least 90% of heifers for mating.
- Sell cows over eight years old (keep herd young).

Management

- Have screening and selection policies.
- A simple but disciplined approach.
- Cull for fertility, no favourites.

Easy care cattle

- Easy calving. Target <5% dystocia. Have zero tolerance – cull.
- Non-interventionist – bad luck repeats itself. Mastitis – cull.
- Feed efficient – cope with high stocking rates.

Genetics from right breeder

- Right breeder will pull you up faster.
- Bull selection and breed plan to look at;
 - Calving ease
 - Milk
 - Growth
 - Fertility
 - Temperament
 - Carcass traits
 - Structure
 - Feed efficiency
- Value your own breeders in your own environment.
- Want moderate framed. Large framed less efficient and less fertile.

- Live off reserves when no feed available.
- Use a breed plan to choose bulls for the herd that suits your needs. Want to push early growth rate, but keep low birth rate. Push early growth rate, but moderate cow weight.

Weaning

- Yard weaning is good science. Socialises young calves. Good yard experience makes easier to handle later as stock not just getting bad yard experience from dehorning, drenching, castration. Good for bug conditioning (all get sniffels etc./ get pestivirus resistance). Control energy intake for 14 days, say in February, better than going backwards and fretting. Good to get started straight away with your grain / hay. Want to wean at 200kg.

Pregnancy testing: Join cows in November and pregnancy test in February. Any not in calf will be culled, not rejoined. This is not only for improving genetic pool, but would put out timing of the operation with different age groups of calves. Better to sell cow and buy a cow in calf.

Pestivirus: Ok if cow not pregnant, but if get exposed to the virus the first time during pregnancy the calf will likely be aborted. If the calf survives it will be a carrier. If the calf gets Pestivirus during weaning the calf will get self-vaccinated. Put infected animals with bulls and heifers and calves. They will be vaccinated for life. Better to have Pestivirus than not.

Return on investment benchmarking would be good. It is a risk/reward thing. The cost of production per kg is very similar for the top 20% of beef producers in Australia. There is a wide range of returns across the industry. Top 20% of producers are making very good money, the bottom 20%, very poor return.

MLA Research – Richard Apps.

- Clear evidence that the 4-5 star compliance program will improve efficiency in delivering high quality beef.
- Delivery of RBV's (?) for carcass traits, lean meat yield, shear force etc.

Targets 2012-2016, Beef

- Increase in positive eating genetics.
- 60% of southern cattle sired by bulls with quantified eating quality traits.
- 25% of Brahman bulls with favourable eating quality alleles.
- Two million cattle graded identified as MSA 4 and 5 (MSA is Meat Standards Australia).

Sheep CRC

- Fat compounds may be different in Dorpers.
- Yearling sheepmeat – Rack and loin cuts are still OK up to two tooth. Traditionally worth less as mutton.
- Asian perception of flavour and odour – maybe need different feed bases. Future Farm CRC (Evergraze).
- Telco (UK) has a standard for lamb producers to meet if they want to be clean and green. It includes animal welfare as well and producers can get 30-40c/kg extra for a limited market.

