

Avoiding costly supplements

Make your own organic feed

The key to quality feed in drought conditions is mineral and humus-rich soil.

By ADAM WILLSON

Supplementing pasture with feed supplements is becoming a common management practice in organic beef and dairy production. By feed supplements I refer to a broad group of feeds that include grain, coprameal, pellets and mineral supplements.

Although each of these products has its place, the key to keeping production costs down is to produce for yourself quality pasture, hay and silage. Only then can producers ensure the product leaving their property is high-quality and full of flavour.

A number of background issues must be addressed by the producer.

Chasing real protein: Profitable organic dairy and beef production requires conversion of protein into both milk and beef. Before buying any feed, ask for a comprehensive feed analysis (including metabolisable energy (ME) and protein %).

With regard to protein analysis, care must be taken when interpreting the results. To test for protein, modern laboratories test for total nitrogen and the final figure is multiplied by a coefficient (commonly 6.25). It is an approximate figure as amino acid analysis is frightfully expensive.

In most cases, the results are reasonably accurate but care must be taken when analysing anaerobic (lack of oxygen) and

molybdenum-deficient soils. In both of these cases, the plant can produce excessive nitrates that lead to high nitrogen and, hence, false protein levels in the leaf. You will observe reluctance by the stock to eat such feed.

Metabolisable energy (ME): ME is the energy that cattle can use for their metabolism. The higher the feed ME, the less feed is required by cattle to produce milk or beef. It is a measurable and inexpensive test that can be sent off for analysis by your local produce store.

ME figures for mixed hays vary considerably but are generally 8-10 ME (megajoules per kilogram dry matter, or MJ/kgDM). Coprameal is commonly 12-13ME (MJ/kgDM).

Good-quality pasture and hay grown on humus and mineral-rich soil can have ME levels that exceed 12ME (MJ/kgDM). Some examples of varying ME values are set out in the table.

Adequate minerals: Many growers are reluctant to apply minerals into their agronomic program but happily supply the stock with mineral licks. Although mineral licks can be critical during the conversion process, the organic management plan must also look at how mineral nutrition is returned to the soil.

The advantages are obvious as these necessary minerals are actually critical for increasing plant dry matter and enzyme production.

Rising costs of imported feeds: For organic growers, the rising costs of imported feeds is a serious issue. Paying \$200-

Feed	DM %	ME (MJ/kg DM)		Crude protein %		NDF %*
		Average	Range	Average	Range	
Barley	90	13	12-13	11	7-15	17
Wheat	90	13	12-13	12	9-16	11
Oats	90	11	9-12	9	6-13	30
Maize	90	14	12-16	10	7-14	11
Sorghum	90	10	7-13	11	6-15	9
Lucerne	85	8.7	8.2-9.2	20	15-22	49
Clover hay	88	9.3	8.2-10.2	16	13-18	40
Rye/clover	84	9		12		39
Corn silage	30	9.9		8		48
Rye/clover silage	24	9		13		49

* NDF%, or neutral detergent fibre, shows the amount of cellulose, hemicellulose and lignin in the feed

Analysis of common cattle feeds. NSW Agriculture Dairylink figures 1997.

\$400 a tonne for imported feed does not make economic sense if good feed only costs \$50-90/t to make yourself.

STEPS TO TAKE

Build stable soil humus: The foundation of a great organic beef and dairy operation is a healthy humus-rich soil. Humus holds 20 times its weight in water and increases the soil's ability to hold nutrients by up to 70%. (See box on page 36 for a detailed discussion of humus).

It is a cornerstone of modern organic farming and can be initiated in as little as 12-16 weeks. This has been mentioned on many occasions but, unfortunately, many producers do not see it as a short-term priority.

Adequate calcium levels: Calcium is critical in pasture production because it primarily connects humus to small soil particles and is also essential for healthy cell walls.

It is best applied with a quality organic matter (such as compost) and applied microbiology. Note that composts ain't composts – quality compost produces fulvic and humic acids and is superior to coal-based extracts.

Ca:K ratio affects carbohydrate and protein production: In soils that do not have a high background level of potassium, the Ca:K ratio has a direct impact on carbohydrate and protein production.

By adjusting these levels, farmers will see stems thicken, leaves increase in size, and quality improve (increased ME and protein levels). A soil test will establish where to focus your attention.

Stimulating enzyme activity: The key to healthy root growth is stimulating enzyme activity. Enzymes are the engine room for plant growth and defence. Enzymes require adequate and balanced supply of trace elements.

In a continent such as Australia with its geologically old soils, mineral supply is critical for healthy plant growth. Again, a soil test will set the blueprint for future nutrition management.

Choose right pasture, hay and silage varieties: Plant

Good-quality pasture and hay grown on humus and mineral-rich soil can have ME levels that exceed 12ME (MJ/kgDM).

variety selection is critical for producing quality cattle feed. The wider the variety of plant species, the better the feed.

This is primarily due to each plant species putting out a particular root exudate that stimulates certain soil microbes. Plant varieties must be adapted to your specific area and sowing windows must be followed to optimise production.

Contact your local Department of Primary Industries for specific planting guides and use your local library to borrow old Department of Agriculture farmer and pasture species handbooks. These are a wealth of forgotten

knowledge.

Irrigation scheduling: For irrigated growers, water scheduling can make a yield difference of up to 80%. Failure to water at the right time can send a pasture into unnecessary stress and early flowering. This affects protein and ME levels immediately.

For dryland producers, attention to humus building will lead to pastures hanging on longer in drought condition and taking longer to die back in extremes of cold.

Timing of harvest: Timing of cutting hay is critical when aiming for high-quality feed. Test pasture for ME or use a refractometer as general guide.

SUMMARY

Quality feed production takes a little planning but returns handsome rewards if the right agronomy is carried out at the right time. Timing of operations cannot be overstated.

Next to stable humus production, balanced and adequate nutrition, timeliness of operations makes the difference between a successful and average organic producer.

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