A PRACTITIONERS PLANS FOR MANAGING AND KEEPING FEED QUALITY

Jim Collins, 'Grevillea', Bega.

BACKGROUND

'Grevillea' is a dairy farm vineyard and winery on the north west outskirts of Bega on the Far South Coast of N.S.W. The farm comprises HA. of which 6.6 HA. is under wine grapes. A further HA. property 3 km to the west was recently purchased by son Michael to be run in conjunction with the dairy.

The land runs from alluvial flats adjacent to the Bega river to undulating to steep granite hills. The whole of the dairy area can be spray irrigated from an unlimited water supply.

Effluent from the Bega Co-op dairy factory is disposed of through the spray irrigation system. At the end of 1989 the water troughs were adapted to supply cheese whey instead of water to the cattle.

Perennial pastures comprise Haifa white clover with Kikuyu, Prairie Grass and various ryegrasses.

Extensive permanent electric fencing is organised around permanent laneways providing 85 paddocks of varying areas.

Our rainfall averages 888mm but large deviations from the mean are usual. Temperatures, humidity and wind speed conditions also vary from maritime with prevailing easterly air to desert with westerly air.

In 1989-90, 408 cows were calved down producing about 1.8 million litres of milk. Since Aug 1988 all calves, bulls and heifers are reared and carried on.

A 40 cow rotary (turnstile) dairy and a 50 tonne winery and sales building complete the picture.

PASTURE AND POLICY

The feed for dairy cows can come from 4 basic sources, pasture, forage crops, conserved pasture or forage crops, grain or waste from food industries. In the Bega circumstance the following comments on each are relevant.

Pasture: Apart from rainfall the Bega Valley has few problems and many advantages for pasture production.

Haifa white clover, perennial ryegrass, prairie grass, kikuyu all thrive. Soils are good, drainage is good, there are no red legged earth mite problems, few real weeds in a well fertilized perennial pasture.

Irrigated pasture can be cheap and where unlimited water is available it is the best option by a mile.

Forage Crops: The regular, if not frequent, onset of torrential rain on highly erodable granite soils where land if suitable slope is not abundant limits this option. On "Grevillea" we never use forage crops.

The problem of making and especially feeding out large tonnage of silage on our undulating to steep country makes this an impossible option especially in wet weather. Apart from a few conventional bales of hay for calves no fodder conservation is practised on "Grevillea".

Grain: The current and future price of grain or pellets (freight >$30 per tonne) dictate that the grain option is used as little as possible. As "Grevillea" is within 2km of the Bega Cheese Factory the use of whey (4% lactose) has recently been exploited as a food source (13L of whey = 1 kg grain).

To Sum Up:

1. pasture must be accepted as the principal economic source of feed for the herd;

2. no investment in fodder conservation has been made;

3. pastures have to be managed to provide the bulk of the herd requirement twelve months of the year.

Pasture Strategy:

To achieve the overall requirement of the herd on day by day basis for the whole year, the strategy adopted has been, to increase the area of irrigated pasture each autumn as evaporation rates decrease in order to germinate areas of annual pasture for grazing in late winter. Whilst it is far too expensive to contemplate watering pasture above say the 70m contour on a year round basis, it is very profitable to germinate it in autumn and water through winter using largely existing plant. Thus the grazing interval which is sometimes as short as 21 days in summer is extended out to 50 or 60 days.

THE 1989 STUDY

Motivation

Intensive livestock industries over the last 30 years have achieved high levels of efficiency on the basis of numerical management of their resources.

By contrast extensive pasture based industries have tended to be based upon seat of the pants decision making made necessary in large part by the lack of control over so many vital factors, eg. rainfall.

Late in 1988 after visiting Mike Larcombe at Maffra a decision was made to employ a person part time 3 days a week to collect data on the amount of pasture harvested by the herd on two days. This gave 4 grazing measurements per week using a rising plate meter, measuring dry matter. Representative samples were plucked, frozen in liquid nitrogen and digistibilities measured (in vitro).

The aim was to have a numerical measurement of the metabolizable energy (ME) expressed in mega joules MJ. harvested by the herd to be used was needed as a basis for feed year planning.

Details

1. On Tuesday, Wednesday and Thursday each week the paddocks to be grazed were measured before and after grazing with rising plate meter.

2. The rising plate was calibrated at the change of each season using pastures before and after grazing.

3. The areas of all paddocks was measured using a planimeter on a 1.2500 aerial photograph.

4. Average number of cows milked, milk production (L), Solids not Fat and Butter Fat levels of the milk were recorded.

5. Cow weights were estimated on the basis of over the scales sale of choppers.

6. The results were recorded in a multiplan spreadsheet. Using U.K. Tech Bulletin 33 forumlae the M.E. value of maintenance and production were summed in the same spreadsheet.

Results - Observations

A number of copies of the spreadsheet are available. It is 208 rows by columns. The two final columns (on a weekly basis) of Total M.E. IN (representing pasture plus pellets) and Total M.E. OUT (being the sum of calculated maintenance plus production) are the main crunch. These two columns are repeated on a monthly and an annual basis below.

Table 1

	Total Feed (Pasture/Pellets)	Total Required (Maintenance & Production)
	OOO (ME)	
January	1,703	1,043
February	1,540	1,007
March	2,152	997
April	3,076	1,053
May	2,422	1,080
June	1,855	1,087
July	1,241	1,036
August	1,730	1,114
September	1,750	1,114
Total	17,469	9,531

Accepting all of the limitations and errors inherent in the design of our study we believe we have calibrated our farm so that in future if we take the U.K. Tech Bulletin 33 raw maintitenance plus production figures and multiply by a factor of 1.83 this will equate to thme herd actual intake in MJ.

The above factor of 1.83 times the theoretical requirement is obviously a combination of stress in a big herrd, walking long distances in hilly terrain, long periods spent walking and in the yaards etc. Certainly we can attempt to improve all of these management factors.

For sure as grain prices rise world wide we will substitute whey for grain.

However, the limit to high production per cow which is implicit to an efficient dairy operation, based upon pasture is the amount the herd can eat, the physical capacity of 400 odd rumens.

The high moisture content of pasture particularly during wet autumns when high growth rate and very wet soil coincide. We have recorded dry matter levels as low as 9% on clover rye pasture which looked fabulous but the herd were falling apart on it. Where are the answers? - eg spraying dessicants like diquat.

CONCLUSION

Ideally intensive grazing industries should aim to match expected feed requirements to feed on offer. The more accurate we can measure and/or predict paddock feed at any one time of the year the more efficient we can be planning and providing for feed deficity periods. What we are doing is, I believe, a step in the right direction. Additional calibration is still required to fine tune the multiplication factor.

REFERENCE

Energy Allowances and Feeding Systems for Ruminants (1975) UK Ministry of Agriculture, Foods & Fisheries Technical Bulletin. 33