ME In Southland

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Introduction.

- What is the potential milk production per hectare on Southland dairy farms using very little supplements during the milking season?
- What are the factors? Limiting people achieving that potential.
- How many farmers know how much energy it takes to produce one kg milksolids?
- How many farmers know how efficient they are at converting the energy they produce into product?
- We think it is time for farmers to stop using the fact they farm in Southland as an excuse for their inefficiencies.
- It is time to focus on MJME production and consumption.

Our paper does not promise to give all the answers but to highlight important facts that we think are affecting ME consumptions on farms. We are not scientists but farmers who are trying to convert energy to milk.

Background.

We were asked to present this paper on what ME grass could be obtained in Southland and how we achieved the results we did.

Each of the three farms involved cut pasture samples twice monthly.

These samples were then measured for

Dry Matter
Organic Matter
Crude Protein
Water Soluble Carbohydrate
Neutral Detergent Fibre
Acid detergent Fibre
Digestibility
Estimated MJME/kg DM

Other details that were recorded

Weather, estimated dry matter cover at sampling, post grazing dry matter.
Milksolids production at the time, grazing round.

Farm Profiles.

The three farms were in Eastern, Central and Western Southland.

Eastern Southland.

86 ha milking platform milking 275 cows producing 105,000 kgs milksolids 2005/2006. Some topping is done on this farm. The cows are wintered off for an average of eight weeks. It is owner operated.

Central Southland

303 ha milking platform milking 935 cows at the peak producing 330,000 kg/MS 2005/2006. Some silage is made to be fed out to cows in the autumn. No topping is carried out or silage purchased. The cows are wintered off for an average of nine weeks. 150 kgs nitrogen per hectare is used. The farm is managed by MilkPride Ltd a sharemilking company who has a manager carrying out the day to day operations.

Western Southland.

214 ha self contained farm milking 400 cows producing 184500 kgs milksolids 2005/2006. It also carried 115 yearling heifers and carryovers, as well as 130 calves. This season all animals were on the farm all year except the yearlings were away for 9 weeks June-August. Any supplements needed are made on farm. Yearlings are used to maintain a post grazing residual of 1300-1450 kgs dm. No topping is done. Milking cows are only fed silage for 3-5 weeks in March April. 22 ha single crop Swedes are used to feed the animals during the winter. 150 kgs/ha nitrogen per annum. The farm has a contract milker carrying out the day to day operations.

Discussion

It is important to understand that three farms have recorded data for a period of eight months. This exercise is not a scientific trial, but a demonstration of the levels of ME (Metabolisable Energy) recorded throughout an eight month period.

There is no conclusive evidence from this work yet except we believe there is more potential milk production to be had from maintaining high energy pasture in Southland.

The most significant factor from our findings is the energy levels in our pasture at certain times of the season will create opportunity to produce more milk per cow and therefore per hectare.

What is ME?

ME is Metabolisable Energy. This is the amount of energy that is available to the animal. The acceptable unit to measure ME is the joules and therefore in diary cow nutrition the Mega Joule is customary.

Why is ME important in Pasture?

As we are all aware the majority of dairy farmers in New Zealand operate a pasture based feeding system, because this is the major feed source to produce milk. So to

offer as much energy in the form of pasture is essential to improve milk production output. This also allows us to produce more milk at a lower cost.

Our Work

Our work this season has consisted of cutting grass on a two week basis over three farms in Southland. These cuts have been sent to separate labs for analysis. The samples have measured the major constitutes in pasture that affect the nutrition of a dairy cow.

We have only concentrated on ME in pasture as this is the most important factor to increased milk production through pasture intake.

The aim of our work was to measure ME under our current management systems. The total aim of measuring ME is to find ways of increasing ME at critical times of the year to increase milk production.

We understand that other nutritive constitutes affect milk production such as protein and NDF. By improving ME values consistently over the season it will result in more consistent milk production, in-calf rates and less inputs. All this adds to our bottom lines.

The cuts were taken every two weeks on pastures above to be grazed by dairy cows. These paddocks cut were chosen randomly and were pre grazing pastures in the grazing rotation.

The cuts were cut to the base of the plant just above soil level. One cut per hectare was taken to measure consistency.

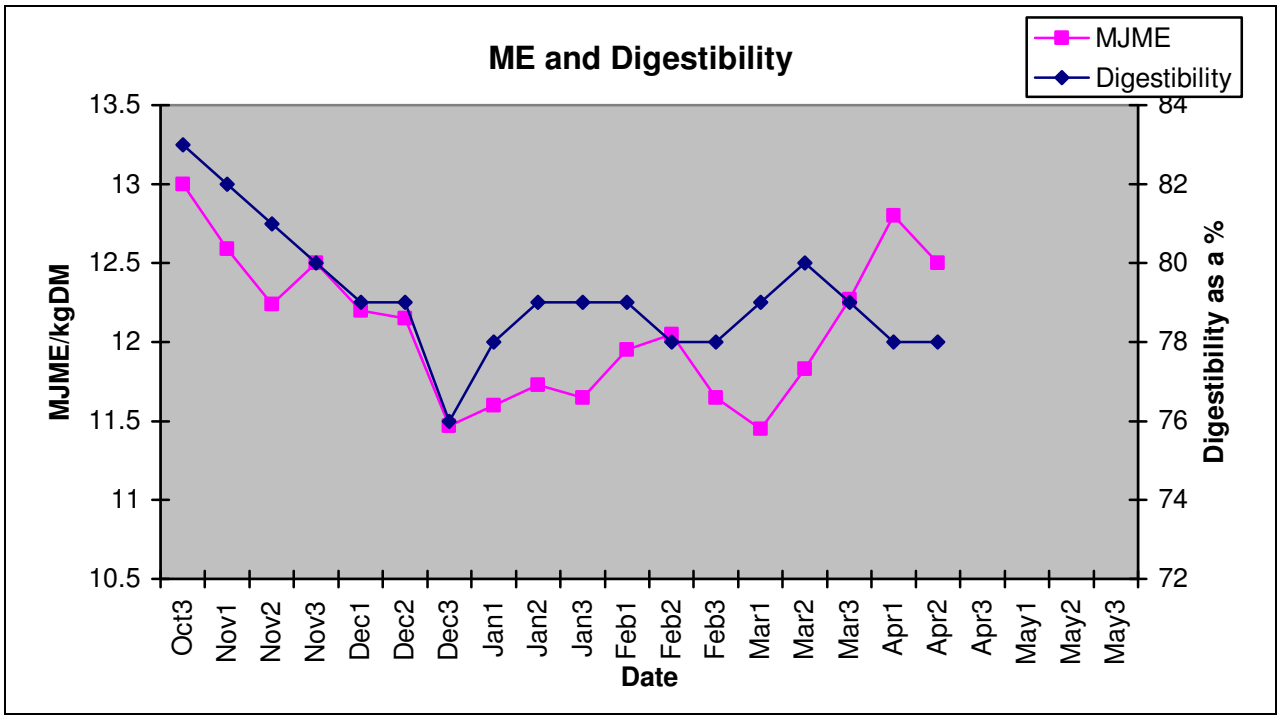
No management decisions were made specifically to bias the sample of the pasture cut.

Pasture species vary across each farm.

Each farm has a similar farming system in the fact similar grazing residuals are achieved after each grazing.

As mentioned in the farm profile each farm varies in size and same practices.

Pasture ME Results



Graph 1

The pasture cuts taken over the eight Month period resulted in the lowest being 11.1 MJME/ kgDM in December and the highest 13 MJME/ kgDM in October and late March.

The ME results across three farms were very similar we did not see any major variations from location to location.

Pasture ME over the seeding period did drop but not to level maybe we expected. The lowest level measured as mentioned was in the last period of December. Neutral Detergent Fibre was 45% and digestibility 74%.

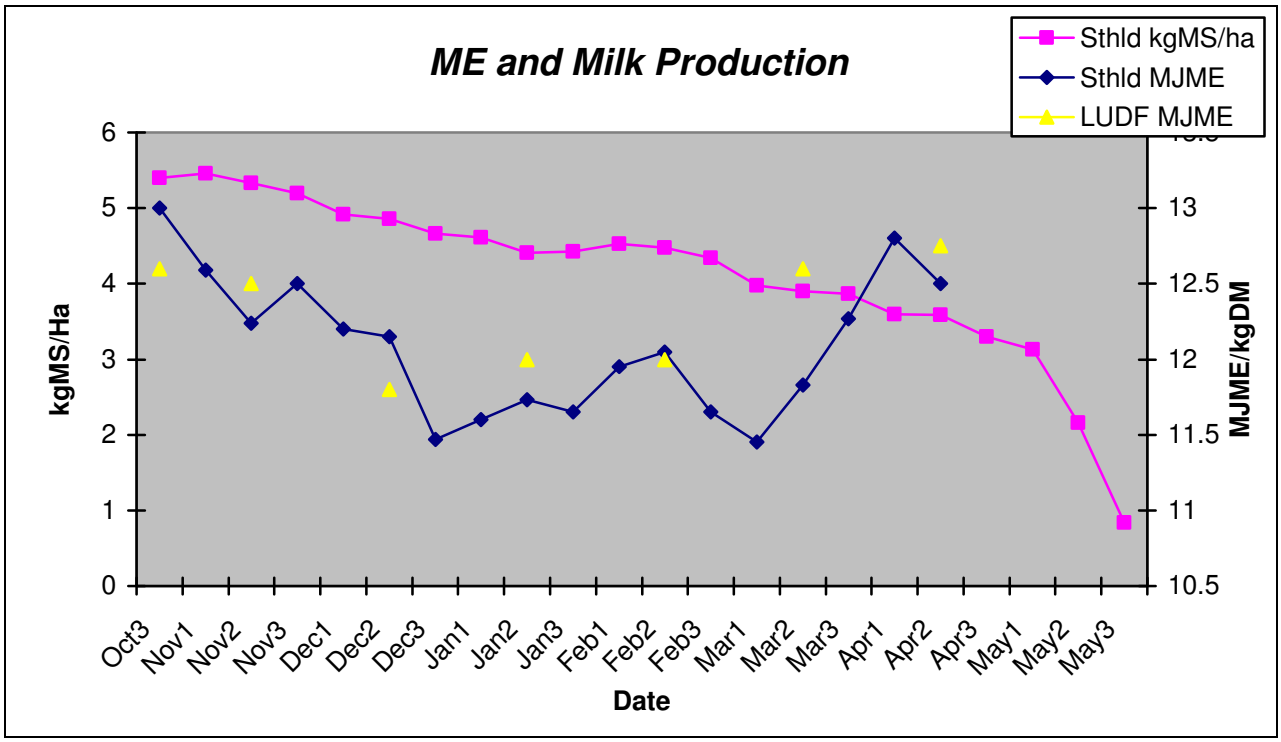
The digestibility measurements of our pasture cuts were very consistent with the ME levels. We believe that pasture species and exact level of cutting had some influence on this.

All three farms grazed to 1400 to 1500 kgDM/ha (3.5cm in height) post grazing from August 2005 through to March 2006 where residual lifted to 1600 to 1700 kgDM/Ha (4.1 cm in height) post grazing.

Digestibility is also a major indicator to improve milk production. This is influenced by grazing management and rotation length.

We believe from our findings we cannot draw strong relationships between our milk production curve and ME curve. The average MJME/kgDM for the 8 month period on three Southland Farms was 11.8 MJME/kgDM.

We cannot explain the ME increase in the March but maybe the warm humid weather. All three farms were grazing a close to a 40 day rotation and pre –grazing 2900 to 3000 kgDM/ha.

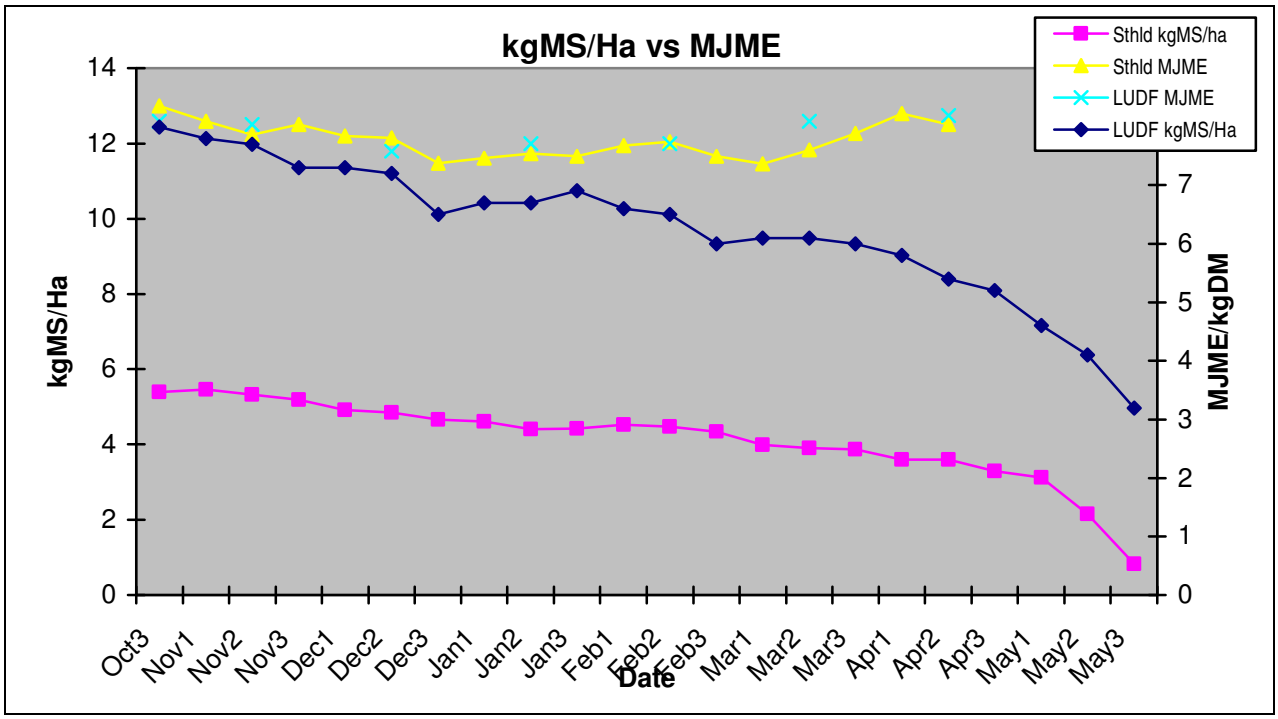


Graph 2

Graph 2 displays the milk production and MJME/kgDM from three Southland farms and the 2005/06 ME results from Lincoln University dairy farm (LUDF).

The MJME results are most significant in this graph. The Canterbury energy levels in pasture are only different in mid March.
LUDF will produce 1800 kgMS/ha this season and the three Southland farms will produce an average of 1160 kgMS/ha.

LUDF run 4 cows/ha and the three Southland farms run an average of 3 cows/ha. This is close to 40% difference in milk production. We understand there are a number of other influences that contribute to this variance (namely weather), but is Canterbury growing 40% more grass than Southland?



Graph 3

Graph 3 shows the milk production from LUDF, the three Southland farms and the ME results from Southland and LUDF. The only difference in the results in Graph 3 is milk production per hectare. The ME results show no significant differences between Southland Canterbury.

Our Conclusions

The conclusions from our measuring and monitoring are we do need to keep monitoring and measuring. If you can't measure it you can't manage it.

We have learnt that by achieving higher energy levels in pasture our farming business becomes more efficient and simpler to manage.

The two most significant factors that we have identified to date to generating more energy is grazing residuals and stocking rate. Both grazing residuals (post grazing levels) and is created by the appropriate stocking rate.

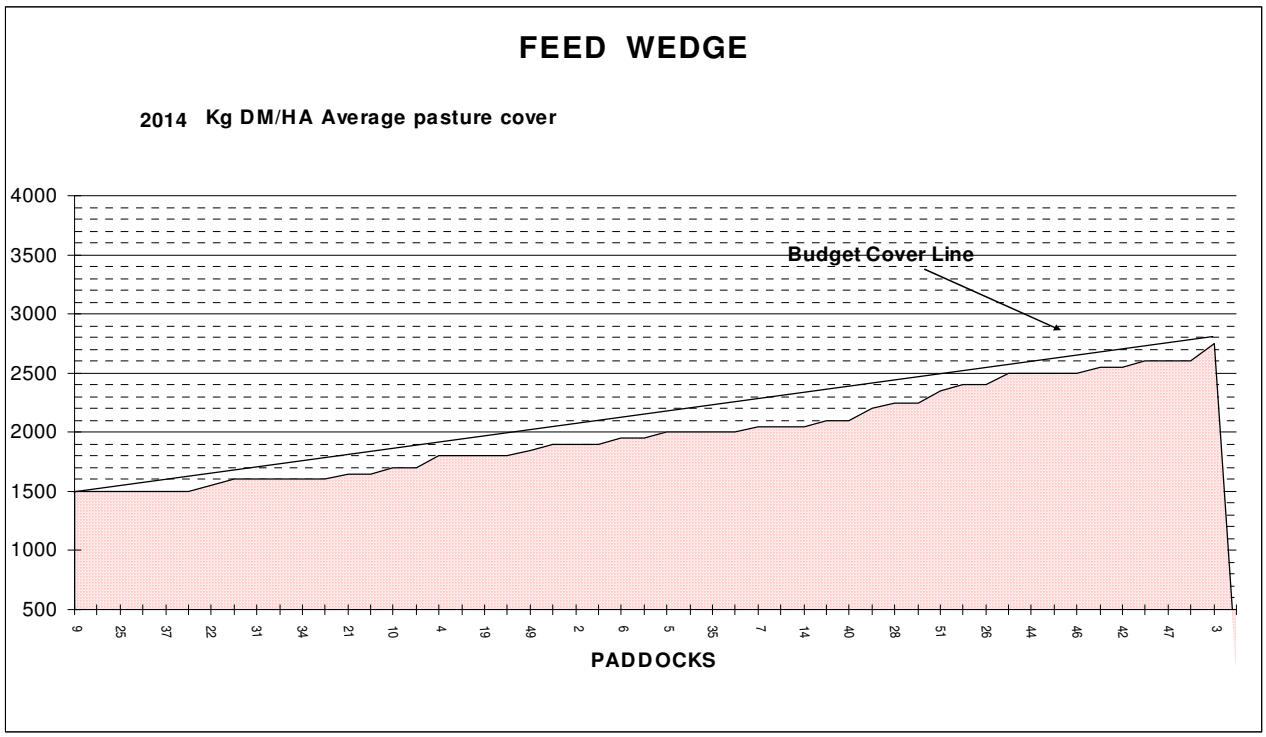
We believe the grazing residuals should not greater than 1400 kgDM/ha (3.2 cm) in August, September and October and then 1500 kgDM/ha (3.57 cm in height) through to April and then1600 kgDM/ha (3.9cm) to the end of May. In simpler terms 1500 kgDM/ha average all season. 1500 kgDM/ha (3.5 cm) allows the pasture to be cleaned

out and all the dead material disappear. This means the entire plant has an opportunity to grow over the following grazing rotation.

By having healthy pasture plants in better growing state is where increased milk production will come from. We need to grow more energy as well as more grass. The aim is to grow higher energy grass as opposed to just more grass.

The old saying it takes grass to grow grass is incorrect when applied in the wrong context. Dry matter is important but the quality of the dry matter is more important. When all three farms grazed to levels of 1400 and 1500 kgDM/ha throughout the year, grazing rotation was the most significant tool in growing the required amount of grass to meet animal demand. In the peak grow and milk production period a 22 to 24 day rotation was achieved.

By using a feed wedge (as seen in Graph 4) we were able to best identify feed surpluses and deficits. 7 day farm walks allowed this information to be formulated. There was a large emphasis on pre-grazing levels in order to achieve the 1400 to 1500 kgDM/Ha post grazing levels.



Graph 4

Stocking rate is the easiest tool to achieving the better grazing residuals. This is also the most cost effective tool. 3.1 cows/ha or greater is most appropriate stocking rate. This is very dependent on a number of things such as individual farm growth curves, soil types etc.

Stocking rate can be manipulated at any time of the season, simply by decreasing the milking area cows graze.

Our summary to date is to increase milk production on less inputs we need to produce more energy. The aim is not to put more supplement in or create more cost but utilise better what we already have.

To produce more milk we will continue monitor energy levels in our pasture, continually graze our pastures out to a minimum of 1500 kgDM/ha all year and use stocking rate to achieve all of the above.

Silage Analysis

Silage samples entered in the Pasture Silage challenge will be analysed at Lincoln University. The tests include: · Dry Matter %, which gives an indication of how much an animal can actually eat · Energy value, measured as megajoules of metabolisable energy per kilogram of drymatter (MJME/kgDM) · Acidity (pH). This helps tell how well the pasture was preserved. A low pH will prevent an unwanted butyric fermentation, which reduces both the feeding value and palatability of the silage. Low DM silage needs a lower pH than high DM silage · Ammonia Nitrogen (NH3-N as a total % of N). Low values for ammonia-N indicate minimal breakdown of protein in the silage, usually because pH has fallen quickly to a low level in the silage. Increasing the ammonia-N from 5 to 10% can result in a 5-10% drop in DM intake. · Digestibility - Feeds of lower digestibility provide the cow with less nutrients for milk production. A 5% decrease in digestibility (from 70% to 65%) can cause a 2kg DM/day drop in DM intake

Tests are also carried out to find out the percentage of organic matter, and the amount of protein and fibre in the silage.