

CONTACT



Getting the best out of summer grazing for dairy cows

Key points

- Knowing the potential milk yield from grazing remains a central pillar of managing dairy cows at grass.
- The daily intake of grass determines milk from grazing, not nutrient content.
- Latest research from AFBI, Hillsborough shows the importance of effective grass utilisation and identifies maize silage as the best buffer feed. Compound feeding at grass does increase total dry matter intake and hence milk yield.
- The long term benefit of balanced nutrition through the summer is critical, particularly to early winter performance.

Each year, the number of customers adopting the Frank Wright Milk Yield and Quality Prediction from grazing increases. And so it should, as attention to detail in all aspects of dairy feeding and management is the basis of profitable milk production. It is as important to know the milk potential from grazing in summer as that from preserved forages in winter. However, many dairy farms continue to base summer feeding on two ill-founded beliefs:

1. Expected milk yield from grazing is approximately the same in the comparable summer month each year.
2. Grass quality is the main driver to milk yield associated with a gradual decline in energy content through the summer.

Supplementary feeding strategy thereafter can be totally wrong with obvious consequences on performance, health and fertility. Problems often only show some months later, as highlighted again in the early winter months of 2006 in which cows from housing to January struggled to meet target performance – unless the summer feeding strategy had matched the conditions. A very elegant two year research study, reviewed herein, has been published by Morrison of AFBI, Hillsborough which showed the effects on margin of differing supplementary feeding to the spring calving grazing dairy cow.

Myth 1 - Milk yield from grazing is approximately the same each year

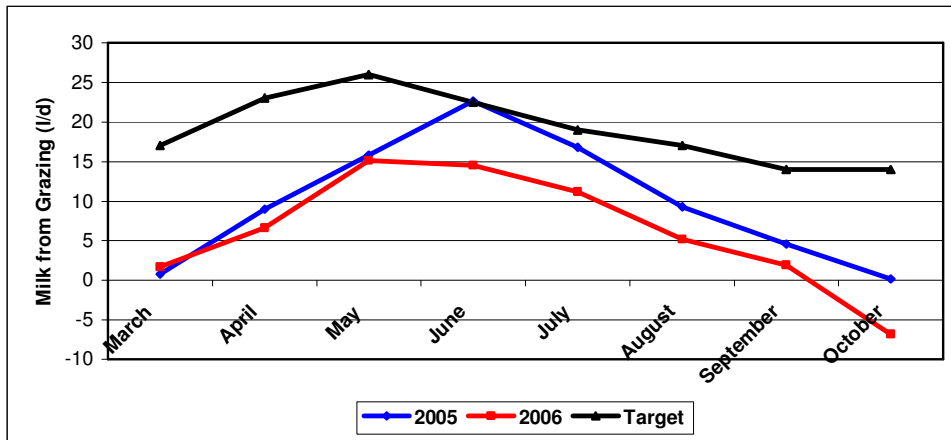
Over several years the Frank Wright system of estimating milk yield potential from grazing has proved to be very accurate. This involves taking handfuls of grass from the grazing area and applying this into the Hillsborough research on grass intake based on intake per bite, bites per minute and total grazing time, as reviewed in previous Contacts.

Comparing average milk yield from grazing each month against target expectations published in Milk from Grass (Thomas et al, 1991) shows:

- a) In practice yields from grass seldom reach target expectations.
- b) Milk from grazing declines significantly from June onwards.
- c) 2005 peak production from grass of 22.6 litres/day in May was some 7.5 litres greater than the 2006 peak of 15.1 litres/day in June

Because of the differences from target expectations and between seasons it is critical to undertake milk from grazing monitoring each summer to accurately control feed management.

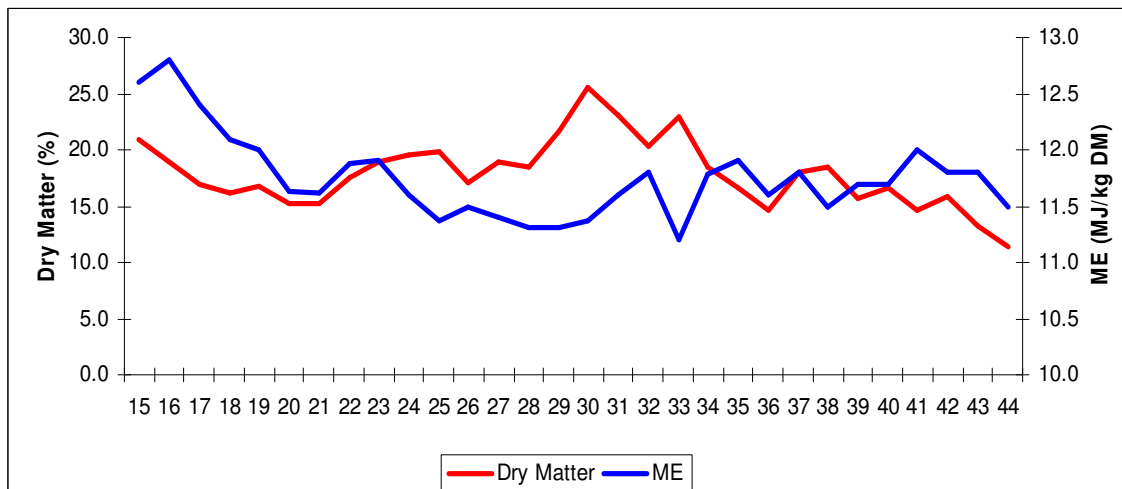
Figure 1: Average milk from grazing by month



Myth 2 - Milk yield is driven by grass quality not grass availability

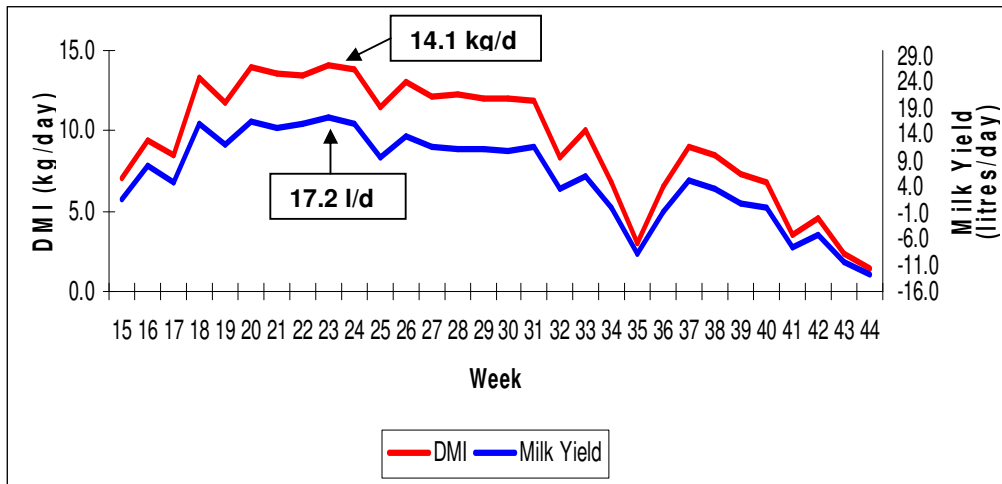
Many consider that declining grass quality through the season is the cause of falling milk yield. In fact, after the initial spring fall in energy content, ME remains relatively constant, ranging around 11.5 MJ/kg DM. Clearly dry matter varies week on week, with the high values in weeks 30 to 33 reflecting the dry mid-summer of 2006.

Figure 2: Dry Matter and ME of grazing by week in 2006



Comparison of ME value against actual weekly potential milk yield from grazing in 2006 shows that the decline in milk production from the beginning of June is in contrast to the relatively constant energy value of grazing:

Figure 3: Predicted Average dry matter intake and milk yield from Grazing 2006



Clearly dry matter intake, as limited by grass availability and grazing time, is the factor driving milk from grass. Indeed comparing the average nutrient analyses of grass over the March to October periods of 2004, 2005 and 2006 shows little difference in values despite very different weather conditions. What is different however is the season's average milk production from grazing, at 5.9 litres/day in 2006 being some 4.7 litres per day lower than 2005:

Table 1: Average nutrient analyses and DMI and milk from grass by year

		2004			2005			2006		
		Ave	Min	Max	Ave	Min	Max	Ave	Min	Max
DM	%	18.1	14.9	20.4	19.2	12.9	32.3	17.9	11.4	25.6
Protein	%	23.2	17.7	29.1	24.4	16.9	33.2	23.7	19.5	30.6
NDF	%	46.7	39.8	53.1	41.3	34.1	49.0	44.0	32.5	50.1
Oil A	%	5.9	4.6	6.8	5.6	4.1	7.4	4.2	3.2	5.5
ME	MJ/kg	11.7	10.9	12.4	11.7	10.8	13.0	11.7	11.2	12.8
DMI	kg/d	n/a			11.4	5.2	17.4	9.4	1.4	14.1
MYFG	l/d	n/a			10.6	-3.5	24.5	5.9	-12.8	17.2

Supplementary feeding of the grazing dairy cow

An article summarising a two year study on the spring calving dairy cows at AFBI Hillsborough is available on their web site. In summary, all cows were managed on a rotationally grazed paddock system, with a target residual sward height of 5 to 6 cm. Differing treatments of supplementary feeding regimes were offered as a) grazing only, b) 4.5kg concentrate/day or c) 2 hours/day after morning milking of either grass silage, maize silage or whole crop wheat silage. The concentrates were offered as two treatments, classified as either rapidly or slowly degradable. In practice there was no significant difference between the two and as such have been combined in the results below:

Table 2: Summary of AFBI Hillsborough two year grazing studies

	Control	Grass Silage	Maize Silage	Wheat Silage	Concentrate
Year 1					
Supplement Intake (kg DM/d)	0.0	3.0	6.3	3.6	3.93
Milk yield (kg/d)	17.1	18.4	19.8	18.0	21.6
Butterfat (%)	3.98	3.99	4.15	4.02	3.85
Protein (%)	3.21	3.14	3.28	3.17	3.23
Year 2					
Supplement Intake (kg DM/d)	0.0	2.8	4.3	5.4	3.8
Grass intake (kg DM/d)	14.0	11.2	11.0	12.1	13.9
Milk yield (kg/d)	22.6	22.5	23.3	23.0	25.8
Butterfat (%)	3.98	3.94	3.91	3.96	3.71
Protein (%)	3.26	3.16	3.21	3.28	3.24
Combined					
Margin over feed costs (£/cow/d)	2.51	2.52	2.55	2.35	2.43

It can be concluded that:

1. Buffer feeding conserved forages, notably maize and whole crop silages, increased feed intake but the response in terms of milk yield was generally modest. The long term benefits of buffer feeding should, however, not be ignored.
2. Maize silage appears the best buffer feed in terms of boosting performance and margin. The benefits will be dependent upon good grass utilisation and are likely to be greatest when grass supplies are limited.
3. Concentrate feeding supported the highest milk yields and dry matter intakes, although butterfat % was slightly lower. The total yield of milk solids was also greatest with concentrate feeding, although margin over feed was not improved.

4. The year 2 study also compared a low and high grazing allowance. There was a mean increase in milk yield of 1.4kg per cow per day with the high grass allowance treatment but this was associated with an increase in post grazing residuals. This can lead to serious sward deterioration, lower efficiency of grassland utilisation and therefore increased cost of grazed grass. Clearly grassland management is critical to profitable summer milk production.

Predicting changing milk quality at grazing

The Frank Wright Milk Yield and Quality prediction from grazing acts as an early warning system for falling milk fat or increasing milk urea values. For butter fat, this is based upon the daily intake of NDF, quickly fermented carbohydrate and oils from grass. For milk urea the parameters are protein %, free nitrates and, most importantly, excess daily intake of rumen nitrogen to energy from grazing. The detail of this was presented in Contact 162. It is interesting to note that the parameters detailed above did perform well in the summer months of 2006 when compared to actual changes in milk quality in practice and as such will continue to be used this year.

In summary

Knowing the potential milk yield from grazing remains a central pillar of managing dairy cows at grass. It is the quantity of grass and grazing time available which critically determines milk from grass, not nutrient content. This varies each year. The latest research from AFBI, Hillsborough further illustrates the importance of effective grass utilisation and identifies maize silage as the best buffer feed. Compound feeding at grass does increase total dry matter intake and hence milk yield. The long term benefits of balanced nutrition through the summer must not be ignored, particularly in terms of early winter performance.

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