



## CHALLENGE NOTE 3D - Planning Winter Feeding Programmes

Minimising body condition score loss and negative energy balance in early lactation is important to optimise dairy herd fertility (see *Challenge Notes 3A, 3B and 3C*). Achieving the optimal balance between forage quality and concentrate feeding level also has a major impact on the profitability of winter milk production. This *Challenge Note* outlines the practical steps involved in planning winter feeding programmes for dairy cows.

## Contents

- Forage analysis
- Predicting milk yield potential
- Choosing a concentrate type
- Concentrate feeding level
- Assessing the dairy cow's winter diet

## DAIRY HERD FERTILITY CHALLENGE

The steps involved in designing a winter-feeding programme for dairy cows include:

- Analysis of the forage available;
- Predicting the milk yield potential of the cow or groups of cows;
- Choosing a concentrate type;
- Deciding the concentrate feeding level;
- Assessing the dairy cow's winter diet.

### Forage Analysis

From a practical perspective, the first step in designing a winter feeding programme is to assess the quality of forage available. Prior to the start of the winter feeding period, at least three representative cores should be taken from the forage pit and sent for analysis with a fully completed analysis request form. This analysis should be repeated on two or more occasions during the winter to monitor any changes in forage quality or dry matter.

### Predicting Milk Yield Potential

The milk yield potential of individual or batches of cows grouped according to milk yield or stage of lactation can be readily predicted based on individual cow milk recording data in past lactations or herd average 305 day milk yields.

### Choosing a Concentrate Type

The type of concentrate to feed a high yielding dairy cow over the winter feeding period should have a good energy density (>11.5MJ/kg fresh weight) a balance of starch, digestible fibre, protected fats/oils and sugar sources, plus a balance of rumen degradable and un-degradable protein sources.

Where the forage available has low intake characteristics, for example, low silage intake potential (<85), low dry matter (<18%), or low pH (<3.8), the concentrate composition becomes more critical. Low silage intakes will result in reduced forage to concentrate ratios. If forage dry matter intake is 40% of the total dry matter intake or less, there is an increased risk of rumen disorders leading to acidosis

and displaced abomasums in high yielding cows.

In such situations, concentrate cereal content (that is, barley, wheat or maize) should be reduced to around 20% and digestible fibre contents (that is, citrus pulp, soya hulls or sugar beet pulp) should be increased to around 35%.

### Concentrate Feeding Level

Decisions on the concentrate feeding level for cows in early lactation can be based on the milk yield and silage quality information seen in Tables 1 and 2.

Table 1: Silage feed value categories.

	Poor	Average	Good
Silage intake potential	80	90	100
Dry matter (%)	17	20	25
ME (MJ/kg DM)	9.0	10.5	11.5
Crude protein (% DM)	9	13	15

Silage quality can be categorised as good, average or poor depending on the silage analysis.

Table 2: Concentrate feed level (kg fresh weight).

Cow performance		Silage feed value		
Herd yield (litres)	Peak yield (litres)	Poor	Average	Good
4500	23	8.0	6.0	2.0
5500	27	9.5	7.0	3.0
6500	31	11.5	9.5	6.0
7500	35	12.5	10.5	7.0
8500	38	14.0	12.5	9.0
9500	42	16.5	15.0	12.0
10500	45	18.5	17.0	14.0

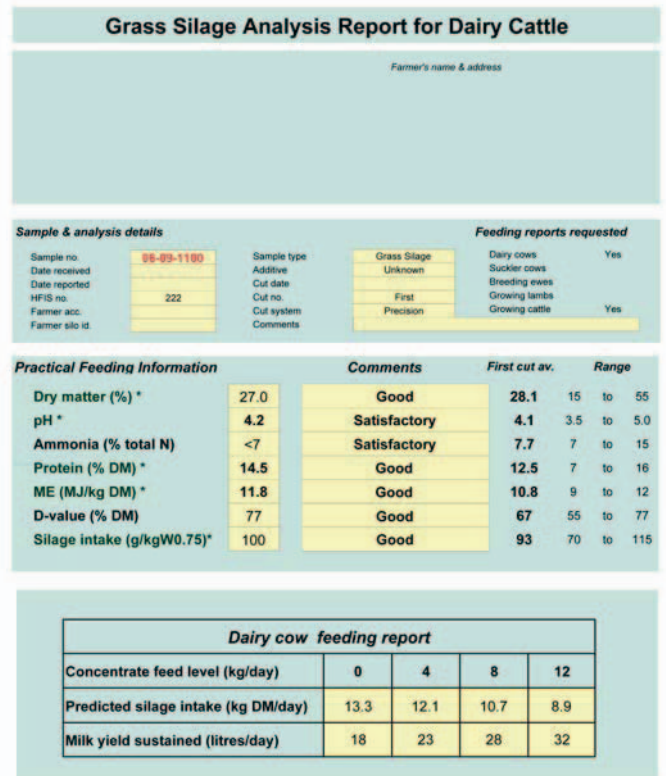
For example, a 6500 litre cow will have an approximate peak yield of 31 litres and will require a concentrate feeding level of 9.5kg of concentrates with average quality silage in early lactation.



For example: last year's silage (Sample A) supported a milk yield of 24 litres from 8kgs of concentrate.

Figure 1: Sample A - last year's silage.

Feeding levels can also be determined based on previous years feeding levels and silage quality. For example, consider the two silage samples seen in Figures 1 and 2. The table of Dairy Feeding Information in each allows a comparison of the production potential of the two silages. The concentrate levels given are not feeding recommendations as they refer to a standard cow purely for comparison purposes.



This year's silage (Sample B), is capable of supporting 28 litres of milk production at 8kgs of concentrate.

This year's silage, (Sample B) is capable of supporting an extra four litres of milk production (28-24=4 litres).

Figure 2: Sample B - this year's silage

Adjustments to concentrate feeding levels can be made on the basis of approximately 1kg of concentrate to two litres of milk production potential. If the concentrate feeding level used last year on the farm was 10kgs for fresh calved cows of the same yield potential, then the concentrate feeding level this year could be reduced to 8kgs (4 litres/2 = 2kgs of concentrate).

Consultations with a Ruminant Nutritionist or a Dairying Development Adviser using computerised ration formulation software will help to fine-tune concentrate feeding levels and also provide predictions on the expected silage intake levels of cows in early lactation. This guidance can be further used to monitor the cow's diet through the winter feeding period.

### Assessing the Dairy Cow's Winter Diet

Having planned a winter feeding programme to minimise the cow's negative energy balance in early lactation, it is essential to evaluate the feeding programme to ensure that cows are performing as planned. There are two main ways of assessing the effectiveness of the dairy cow's winter diet. These are:

- 1) body condition scoring;
- 2) dietary energy and protein intake assessment.

**Body condition scoring:** Regular (monthly) body condition scoring of cows in early lactation will indicate the level of condition score loss taking place in early lactation. The process of body condition scoring dairy cows is described in *Challenge Note 3C: Body Condition Scoring Dairy Cows*. However, by the time losses in body condition score are noticed visually, excessive condition score loss may have taken place.

**Dietary energy and protein intake assessment:** The dairy cow's energy balance should be assessed in early lactation so that corrective management changes to the cow's diet can be made promptly to avoid excessive body condition score loss. The need for management changes to the cow's feed can be addressed earlier through dietary analysis than through body condition scoring. The procedures for checking the dairy cow's winter diet are described in the *Challenge Note 3E: Assessing the Dairy Cow's Winter Diet*.

## Summary

To plan a winter feeding programme for dairy cows:

- Analyse forage prior to the start of the winter and repeat on two or more occasions during the winter;
- Choose a good quality concentrate with a balance of starch, digestible fibre, protected fats/oils, sugar and good quality protein sources;
- Decide the concentrate feeding level based on comparisons with last years silage or milk yield and silage quality look-up tables;
- Monitor the performance of the feeding programme through regular body condition scoring and assessment of dietary energy and protein supply.