

Effect of forage quality on carbon footprint

- Quality forage making improves forage intake
- Increases milk from forage
- Decreases reliance on purchased feed which has largest footprint

In 2 examples the effect of quality forage making in a grass silage and compound based diet is shown. The best 20% and worst 20% of samples analysed by the Trouw Nutrition Laboratory in 2022 were used.

| Nutrient | Units | High Quality Silage | Low Quality Silage |
|-----------------|--------------|----------------------------|---------------------------|
| Dry Matter | % | 30.0 | 40.0 |
| Crude Protein | % DM | 16.0 | 13.9 |
| NDF | % DM | 45.5 | 48.8 |
| D Value | % | 72 | 65 |
| DyNE | MJ/kg DM | 6.21 | 5.52 |

Rations were formulated for 30 litres of milk

Diets were optimised to meet nutritional requirements for 30 litres of milk taking into account; achievable forage intake, compound feed level & compound formulation.

| Nutrient | Units | High Quality Silage | Low Quality Silage | Difference |
|------------------------------|---------------------------------|----------------------------|---------------------------|-------------------|
| Grass silage, kg DM | kg DM | 12.0 | 10.0 | -2 |
| Compound, kg | Kg | 10.0 | 11.3 | +1.3 |
| Carbon Footprint of Compound | kg CO ₂ e/tonne | 1342 | 1341 | -1 |
| Carbon Footprint of Ration | kg CO ₂ e per ration | 20.4 | 22.5 | +2.1 |
| Ration Cost | £/ ration | 4.74 | 5.39 | +0.65 |

What effect does this have on carbon footprint?

- Compound feeds had the same carbon footprint per tonne
- Ration footprint was lower for high quality forage ration
- Carbon footprint per kg FPCM decreases by 3%

Action points:

1. Ensure you plan for forage making by taking pre-cut samples to monitor grass growth and determine when grass is ready for silage making
2. Analyse forage frequently to monitor changes
3. Balance the diet using the NutriOpt Dairy Model to provide nutrients that the cow needs:
 - a. Meet energy and digestible intestinal protein requirements
 - b. Balance the rumen for fermentation
 - c. Support rumen health
4. Review carbon footprint of feeds using MyFeedPrint
 - a. Measure and monitor carbon footprint per kg FPCM using MyMilkPrint; to realise effects of forage and feed on end footprint of milk production

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