# Teagasc Green Acres Calf to Beef Fact Sheet

# Silage quality and concentrate supplementation

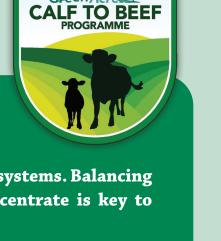
Grass silage is an important winter feed in calf-to-beef systems. Balancing this forage with the correct quantity/quality of concentrate is key to achieving the desired winter weight gains.

# Why complete a silage analysis?

- Visual assessment alone is not adequate to determine silage quality; laboratory testing is recommended.
- Provides information on silage nutritive value and preservation; informed concentrate feeding decisions can be made.
- A breakdown of dry matter (DM), dry matter digestibility (DMD), metabolisable energy (ME), UFV, UFL, pH, crude protein and other relevant information will be generated.
- Mineral profiling (macro and trace) of silage can be obtained through a wet chemistry analysis.

# **Correct sampling procedure**

- Poorly taken silage samples often lead to inaccurate results.
- A period of 5-6 weeks should elapse between ensiling and sampling.
- A long core sampler should be used.
- 3-5 cores from well-spaced points on or between diagonals on the pit surface should be sampled.
- Core to within 0.5m of the pit floor.
- Discard the top 5 inches of each core before mixing into a composite sample.
- Alternatively sample an open pit by taking nine grab samples in a 'W' pattern across the pit face.
- Exclude air, seal well in a bag and avoid posting samples late in the week.
- When testing bales, a number of samples from each batch of bales made must be taken in order to get a representative sample. Test each batch separately.
- Use only Forage Analysis Assurance Group (FAA) accredited labs when having silage samples analysed.





#### Table 1: Key information provided from a silage analysis

Unit of measure	Meaning	Low	High	Target
Dry matter (%)	Feedstuff less water content	13-17	40-55	28-32
pH	Measure of acidity	3.4-3.7	4.5-5.5	3.8-4.5
Ammonia – N (% N)	Indicator of grass N content at cutting	4-7	15-25	<10
NDF (% DM)	Measure of forage fibre and intake potential	42-47	55-65	<44
DMD (%)	Measure of quality	55-65	76-80	>72
ME (MJ/kg DM)	Energy content (linked to DMD value)	8-9	11-12	>11
UFV/UFL (unit/kg DM)	Energy content (linked to DMD value)	0.6-0.7	0.89-0.96	>0.89
Crude protein (% DM)	Measures N as indicator of true protein content	7-9	15+	>13.5
Ash (% DM)	Indicator of soil contamination	5-6	12-15	<8.6

### Winter weight gain requirements

Calf-to-beef systems require superior quality silage, as animals have to perform at every stage of the production system. Table 2 highlights the targeted average daily gains (ADG) of animals over the winter months for various production systems.

Table 2: Daily winter weight gain targets for spring-born calf-to-beef animals at various stages

	21 month steers	23-24 month steers	28-30 month steers	19 month heifers	U16 month bulls	20 month bulls
1st winter (kg/day)	0.6	0.6	0.6	0.5	0.85	0.70
2nd winter (kg/day)	-	1.0-1.05	0.5	-	-	-

# Matching silage quality and concentrate feeding

- Concentrate supplementation provides energy and protein to an animal's diet that may be lacking in silage.
- Calf-to-beef systems require excellent quality silage (DMD of >72).
- Additional meal supplementation will be required to improve the overall energy/protein density of the diet where silage quality is sub-optimal.
- Growing and finishing animals have varying requirements for energy and protein one concentrate will not do both.
- Ensure animals are adequately provided with minerals, either through the concentrate or additional supplementation.
- For more detailed information on balancing silage quality and concentrate feeding, contact your local Teagasc advisor.

# Energy

Energy is typically the most limiting factor in beef diets. In terms of rations, weanling rations have a requirement of >0.94UFL, while >0.92UFV is necessary for finishing rations. Table 3 provides guideline daily concentrate feeding rates depending on the quality of silage (DMD) available.

Table 3: Guideline daily feeding rates based on silage quality (DMD)

Animal type	Target ADG	66 DMD	68 DMD	70DMD	72DMD	74DMD	76DMD
Weanling	0.6kg/day	1.8kg	1.5kg	1.2kg	0.9kg	0.6kg	0.4kg
Finishing steer	1kg/day	7.0kg	6.0kg	5.5kg	5.0kg	4.0kg	4.0kg
Finishing heifer	0.9kg/day	7.0kg*	6.0kg	5.5kg	5.0kg	4.0kg	4.0kg

<sup>\*</sup>Ad-lib feeding should be considered

#### Protein

After energy, protein is the next limiting factor in the winter diet of dairy-beef animals. Always balance the protein content of the concentrate with the protein content of silage. Weanling rations should have a crude protein content of 14-16%, while 11-14% is needed for finishing rations.

Table 4: Crude Protein (%/kg fresh weight) required in concentrate feeds for grass-silage based diets

Animal type	10% CP silage	14% CP silage	
Weanlings (1.0-1.5kg/day feeding rate)	20%	14-16%	
Weanlings (2.5kg/day feeding rate)	16%	*	
Finishing steers and heifers	14%	11-12%	
Finishing bulls	11-12%	11-12%	

<sup>\*</sup>Silage with a crude protein value of 14% or greater tends to have a high DMD value.

More information on the Teagasc Green Acres Programme can be found at Teagasc.ie and on AgriLand.ie.

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<sup>2.5</sup>kg/head/day concentrate feeding rates are not recommended.