



# In pursuit of perfect silage

Ciarán Lenehan looks at the all-important 2017 silage analysis from the BETTER farm beef programme farmers

In the grand scheme of things, we are not good silage-makers. A Teagasc national study carried out earlier this decade in which 150 farms had their silage sampled in consecutive years showed average DMD (dry matter digestibility) values of 63% and 60%. Neither of these values would maintain a dry suckler cow in a winter period.

As part of the BETTER farm beef programme, we are aiming for all of our participants to break the mould and make good-quality grass silage. All of our farmers were able to take two main cuts this year and here we have taken their best silage sample of the two cuts and ranked them. Almost all of our participants have got a supply of surplus bales in their yards, removed from their grazing areas during periods of high growth. The vast majority of these bales are excellent quality from a feed value point of view (72%+ DMD). However, given that some farms have a much bigger bank of these bales saved than others, they have been omitted from our analysis.

The average BETTER farm silage this year is: 34.8% dry matter, 4.4 pH, 8.9% ammonia-N, 11.8% crude protein, 71.2% DMD.

**Table 1: BETTER beef farm main silage cut analysis 2017 for Connact and Ulster**

Name	County	Cut	DM %	pH	NH <sub>3</sub> %	CP (%)	DMD* %
Garreth McCormack	Cavan	2nd	36.2	4.4	11.0	11.4	73.0
The Grieves	Donegal	2nd	18.0	3.8	5.0	8.7	73.0
Nigel O'Kane	Galway	1st	33.0	4.4	16.0	10.4	67.0
Philip Keville	Leitrim	1st	37.0	4.8	2.9	15.0	69.0
Thomas Holmes	Mayo	1st	42.0	4.5	6.0	13.1	77.0
Wesley Browne	Monaghan	2nd	26.5	4.1	3.1	13.0	74.0
Padraig O'Connor	Roscommon	2nd	21.1	4.2	13.0	11.4	65.0
Glen McDermott	Sligo	1st	54.1	5.2	7.0	13.3	73.0
Average			33.5	4.4	8.0	12.0	71.4

**Table 3: BETTER beef farm main silage cut analysis 2017 for Munster**

Name	County	Cut	DM %	pH	NH <sub>3</sub> %	CP (%)	DMD* %
Sean Hayes	Clare	1st	42.2	4.4	7.0	11.3	75.0
John McSweeney	Cork	1st	52.6	5.2	9.0	11.7	75.0
Kieran Noonan	Cork	1st	55.4	5.3	9.0	12.7	65.0
The Flahertys	Kerry	1st	54.6	5.5	7.0	14.3	73.0
Shane Gleeson	Limerick	2nd	24.8	4.4	15.0	13.6	70.0
The Stanleys	Tipperary	2nd	38.4	4.6	11.0	12.1	68.0
Maurice Hearne	Waterford	1st	20.7	3.6	5.0	14.4	73.0
Average			41.2	4.7	9.0	12.9	71.3



Of samples from main silage cuts, the average silage is 71% DMD and 11.8% crude protein on BETTER farms.

## What constitutes a good silage?

### Dry matter

The material remaining when the water has been removed. Wet silages (<20%) are difficult to preserve, will undergo effluent losses and lead to lower intakes. Bales usually have higher DM% values (25%+). However, too high a dry matter concentration can lead to reduced crude protein concentration and sometimes reduced aerobic stability. **Target:** 22-35%.

### pH

This is a measure of the feed's acidity. Ideally, pH should be between 3.7 and 4.3. This threshold represents a silage that is well-preserved and will be slow to spoil. Silage with a pH of less than 3.6 can lead to acidosis and may require buffering.

Dry silages (22-30% DM) can have a high pH (~4.6) and still have undergone a good preservation, but this is not the

case for wetter silages (<18% DM). **Target:** 3.7-4.3%.

### Ammonia-N (NH<sub>3</sub>-N)

Gives an indication of protein breakdown. High ammonia N levels indicate poor fermentation and will lead to depressed intakes. Values of <5% indicate excellent preservation, while >15% will lead to reduced intakes. **Target:** <13%.

### Crude protein (CP)

Traditional measure of protein content based on nitrogen concentration. Values in excess of 13% indicate a young, leafy crop. We should be aiming for at least 11.5%. Too high a crude protein value (17%+) can be a sign that a good portion of the plant's protein will be rapidly degradable and thus not easily utilised. Feeding excessively high crude protein silages during breeding season is not advised. **Target:** 11.5-16%.

### DMD

Feeding (energy) value of the silage expressed as a percentage. **Target:** >70%.

**Table 2: BETTER beef farm main silage cut analysis 2017 Leinster**

Name	County	Cut	DM %	pH	NH <sub>3</sub> %	CP (%)	DMD* %
Tom Bolger	Carlow	1st	24.0	3.7	10.0	14.1	77.0
Ricky Milligan	Kildare	1st	35.1	4.6	8.0	11.4	76.0
Michael McDonald	Kilkenny	1st	31.9	4.6	14.0	12.1	67.0
Harry Lalor	Laois	1st	53.6	5.4	9.0	12.1	72.0
Robert Abbott	Longford	1st	26.5	4.8	15.0	15.6	76.0
Martin O'Hare	Louth	1st	25.0	3.7	9.0	9.3	66.0
Joe Healy	Meath	1st	28.5	3.6	5.0	9.7	71.0
John Dunne	Offaly	1st	27.7	4.0	11.0	10.4	65.0
Ken Gill	Offaly	2nd	47.6	4.4	9.0	10.3	68.0
Martin Downes	Westmeath	2nd	16.5	3.7	6.0	12.9	79.0
The Breens	Wexford	1st	27.8	3.6	5.0	10.6	67.0
Brian Doran	Wicklow	1st	38.9	4.4	12.0	11.7	69.0
Average			31.9	4.2	9.4	11.7	71.1

## The verdict

The average BETTER farm silage is dry – at almost 35% it's atypical of what we generally see across the country. However, as farmers wise up to the fact that they're paying money to ensile water every year, we are seeing more and more farmers choosing to give their crops a good wilt. Also, most of the samples included here are first cut and those that were on the ball timewise (able to cut in late-May) experienced an extended dry spell, affording them the opportunity for a wilt.

While our pH is high at 4.4, the fact that dry matter is high in tow means there is no cause for panic. An acidic (low) pH is a sign of a good fermentation and that any unwanted bugs were quickly inhibited. As both the bugs that negatively affect our silage and the substrates for fermentation are largely carried in water, a high dry matter silage (low water concentration) will typically undergo a less comprehensive fermentation but also carry a lower concentration of these undesirable bugs in the first place. They are generally easy to preserve but can become unstable quickly at feedout.

Our protein and DMD values are good, but quite low for silages harvested in May. What does make sense is if the silage was made on older pastures, with lower than desired levels of ryegrass in the sward. This is the case on many of the BETTER beef farms, where reseeding plans have since been put into motion and will continue in the coming years.

## The best

For me there are three contenders for the best silage in the programme. Energy is the most limiting factor in livestock production, particularly in forage feeding situations. So, we look to DMD when picking our winner – it's the main indicator of the 'power' in our silage. In Mayo, Tommy Holmes has a feedstuff with both high DMD (77%) and crude protein (13.1%) values. His pH of 4.5 is a shade high, but as his dry matter is also high (42%) there should be no fermentation issues. At 6% there is no issue with ammonia concentrations.

In Westmeath, Martin Downes has beaten Tommy by two units, producing a 79% DMD crop with a similar crude protein concentration. His dry matter value of 16.5%, however, is lower than I'd like to see. The accompanying low pH value points towards a perfectly preserved feedstuff, though there may be a slightly lower intake than desired with silage this wet.

Just shading the verdict is Carlow's Tom Bolger, whose silage has two units lower DMD than Martin's at 77% but has produced a well-preserved (3.7 pH) forage with high levels of crude protein (14.1%) and a higher dry matter concentration (24%).



Tom Bolger.



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