

You can't beat real silage data

These samples from County Meath show just how variable silage quality can be

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Testing your silage quality is the first step to improving it. With this in mind, 53 sheep and beef farmers from Meath and Dublin who are participants in the KT programme submitted a total of 74 silage and haylage samples to me. Samples were tested between October 2016 and January 2017. Farmers had the option of submitting fodder samples through Teagasc or through local feed merchants for testing.

These results do not represent an average of the silage on Irish drystock farms. For example, some farmers only tested the cut that they intended to feed at a critical time, such as to ewes in late pregnancy. As a result,

some farmers tested their best fodder.

The aim of the exercise was to:

- Discuss farmers' own results at group meetings.
- Make feed recommendations based on known results.
- Discuss practices causing these results.
- Discuss changes in practices to improve next year's crop.

Dry matter

Sheep farmers like high DM silages because it means fewer bales, less effluent, less straw and less lameness. Wilting increases the fodder intake by sheep, beef cattle and suckler cows. However, high-DM fodders tended to have reduced CP, lower DMD, higher pH and sometimes poorer aerobic stability.

To maximise dry matter, mow the grass in the afternoon when dry matter (and sugar) concentrations are likely to be at their highest. To maintain silage quality, wilting needs to be short and sharp. Wilt for a maximum of 30 hours.

Among these samples, it could be seen that long wilting periods lowered silage DMD and CP levels. Research by Tim Keady of Teagasc indicates that each 24 hours of wilting reduces the DMD by 0.6% to 2.2%. To speed up wilting, spread grass over the entire ground.

Crude protein

Crude protein levels are highest in young leafy high-DMD grass. Tim Keady's research found that every one week delay in cutting date resulted in a loss of about 1.5% in CP levels. To maximise the amount of leafy material, graze the silage ground down tight to 3.5cm to 4cm by mid-March. This will remove any dead butt left over from previous autumn and winter. Mow the crop when the seed heads start to come out of the grass.

Dry matter digestibility

This is a very important figure. The higher the DMD, the higher the intake and performance. To maximise the DMD% of the silage crop, con-

Table 1: Range in fodder test results from 74 samples

	Lowest	Average	Highest
Dry matter (%)	17	33	74
pH	3.5	4.4	5.6
Ammonia (% total N)	1	9.6	21
Protein (% DM)	7	11.7	18
DMD (% DM)	51	67	77

Table 4: P & K fertiliser nutrient application rates guidelines for first cut silage (kg/ha)

Soil index	1	2	3	4
P required	40	30	20	0
K required	175	155	125	0

(Source: J.Patton, 2016)

Table 2: Main reasons for drop in DMD

Cause of drop	Size of drop (DMD % units)
1 week delay in harvesting	3%
Old pasture low in ryegrass	5%
Lodging	9%
Not grazed (dead butt)	3%
Heating at feed out	3%
Bad preservation	3%

(Source: Teagasc Grange Beef Research Centre)

Figure 1

Variation in fodder dry matter % among 54 KT group members

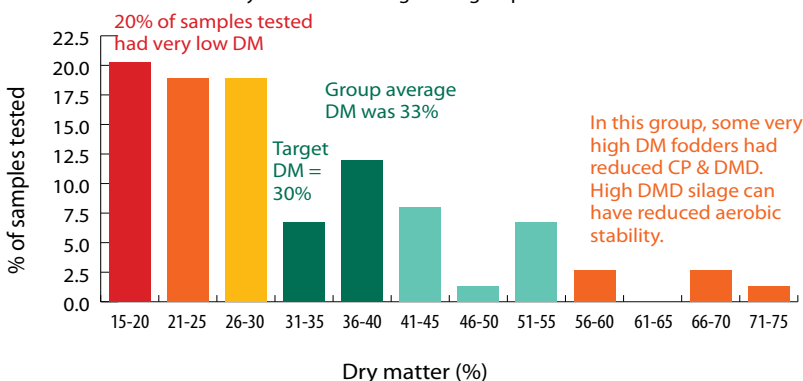


Table 3: Target silage DMD for different types of livestock

Livestock type	DMD
Breeding ewes in late pregnancy	75%*
Finishing cattle	75%*
Growing cattle	72%**
Milking suckler cow or dry suckler cow requiring BCS gain	70%**
Dry suckler cow requiring maintenance	66%**

(Source: *Tim Keady 2012, **Quality Grass Silage for Dairy & Beef Production Systems, 2016)

Figure 2

Variation in fodder crude protein % among 54 KT group members

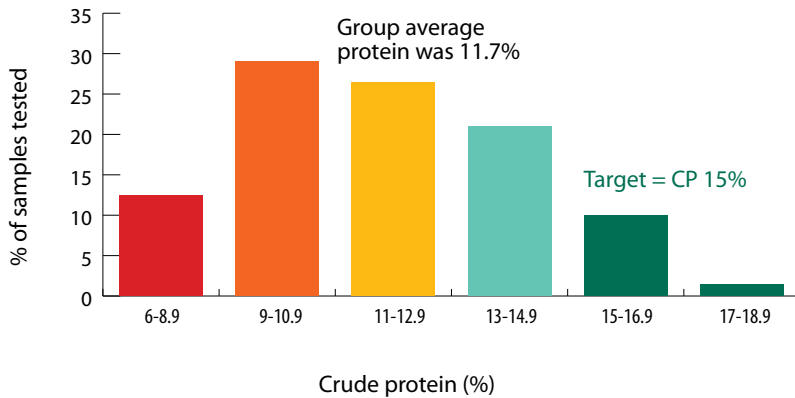


Figure 3

Variation in fodder DMD among 54 KT group members

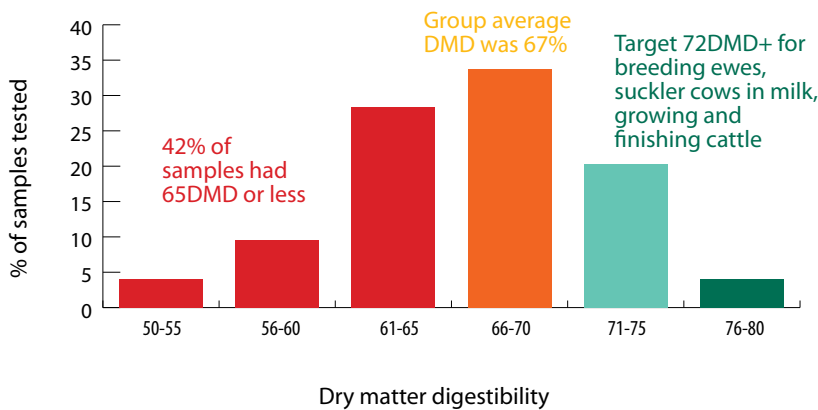


Figure 4

Variation in fodder ammonia % among 54 KT group members

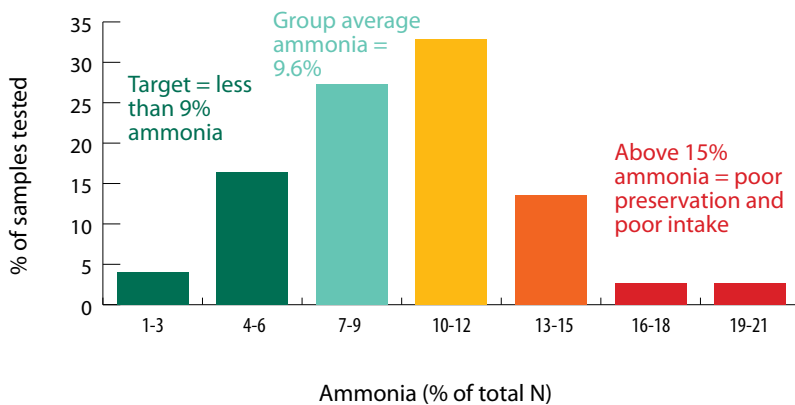
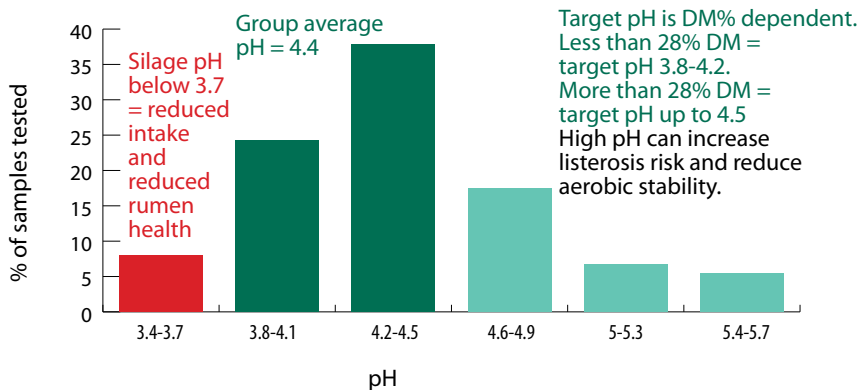


Figure 5

Variation in fodder pH among 54 KT group members



consider the Teagasc research findings in Table 2. Graze down the butt by mid-March and mow the crop when the seed heads start to come out of the grass. Avoid under-use of N, as the tendency is to wait for crops to bulk up. Avoid too much N, as crops can lodge. See N, P and K section below.

Livestock will decide target DMD

As shown in Table 3, the type of livestock on your farm will decide your target DMD silage.

Ammonia %

Of the samples tested, 5.4% had ammonia levels above 15%. This indicated they were poorly preserved. The farmers with the high ammonia silage noted that it reduced intakes.

To minimise ammonia levels: soil contamination appeared to increase ammonia levels in a number of samples. Soil contamination, particularly when combined with high pH, increases the risk of listeriosis. Mowing too close to the ground, lodging or excessive tedding can also increase the risk of soil contamination. Allow at least one day for every two units of N applied. This appears to be particularly important for low dry matter silages.

pH

Of the samples, 8% had a very low pH (3.7 or less) which is likely to reduce intake. The target pH depends on the DM% of the silage. If the silage is less than 28% DM, then pH of 3.8 to 4.2 indicates good preservation. However, if the silage is more than 28% DM, then silage can be well preserved up to a pH of 4.5. High pH can increase the risk of listeriosis and reduce aerobic stability. However, it is quite common to have a high pH in well-preserved high-DM silages.

N, P and K requirements

As a rough guide, grass will use about two units of N per day. Typically apply 80 to 90 units of N per acre on ryegrass swards. To get good yields, it is important to soil test and meet the P and K requirements of the crop as outlined in Table 4.

Key conclusions from this exercise

- Massive variation in silage quality between farms and within farms.
- Tendency to underestimate good-quality silage.
- Tendency to overestimate poor-quality silage.
- Key characteristics often hard to predict accurately without lab analysis, e.g. protein %.
- Most of the factors influencing silage quality are within the farmers' control.
- Farmers who make good silage year after year have a plan.