

# Making enough quality grass silage for dairy systems

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## Summary

- Target grass silage dry matter digestibility (DMD) of at least 68–70% for spring calving dry cows, and 72–74% for milking cows and young stock. Winter milk herds should aim for >75% DMD silage for fresh calved cows.
- Growth stage at cutting and sward condition at closing are the main determinants of silage DMD.
- Ensure good soil fertility status and adequate spring nitrogen application to maximise silage yields at target quality.
- Manage silage ground for high total annual dry matter yield per hectare rather than yield from an individual cut.

## Making quality silage

Grass silage makes up around a quarter of the annual feed budget on the average dairy farm. Where land type is heavy and/or dairy grazing stocking rates are high (>3.6 cows/ha milking platform), this could be closer to one third of annual feed intake. It is essential then, to have a plan in place to meet silage yield and quality targets. A good management plan will deliver on the three main objectives for quality silage:

- Good dry matter (DM) yield for the first and subsequent silage cuts with high annual grass tonnage per hectare.
- A clean, well-preserved silage with good palatability and minimal waste.
- The appropriate quality (DMD) for the type of stock to be fed.

Achieving high annual DM yield/ha and good crop preservation are consistent aims across all farming systems. Optimum DMD will vary depending on the type of animals to be fed, e.g. dry cows vs. milking cows. Table 1 outlines typical quality targets and corresponding expected DM yields for first cut silage crops. Differences in yield due to cutting date will generally be offset by heavier second cut crops on swards cut earlier for first cut. In some circumstances (e.g. silage-only land blocks), earlier cutting will also facilitate a third cut in late August, further boosting total annual silage production.

**Table 1. Guideline grass silage DMD for different classes of dairy stock**

	Dry cows	Spring cows in milk	Growing heifers	Winter cows in milk
DMD %	68–70	72	72	75
Typical 1 <sup>st</sup> cut date	Early June (or 2 <sup>nd</sup> Cut)	Late May	Late May	Mid May
1 <sup>st</sup> cut yield (t DM/ha)	5.5 to 6.0	5.0 to 5.5	5.0 to 5.5	5.0*

\*Assuming grazed in late autumn not in spring

Recent Teagasc surveys of silage quality have shown that national average DMD on dairy farms stands at 66% (DMD range 58% to 78%). This is comparable to silage quality survey results from the mid-1980's and shows that the average silage DMD remains sub-optimal for any class of dairy stock. It is often argued that spring-calving pasture-focussed systems feed silage mostly to dry cows, and therefore do not require significant stocks of quality feed. However, in a typical spring calving system stocked at 2.5 to 2.8 cows/ha, up to 50% of total silage will be consumed by milking cows. This will increase for farms at higher stocking rates, or farms operating on heavy land. Furthermore, all youngstock silage and 100% of recommended silage weather reserve (>500 kg DM/cow) should be of good quality. This highlights a requirement to put renewed focus on silage quality as well as quantity. In any case, the management practices that maximise annual forage DM yield/ha will also deliver better DMD so these objectives can be considered as complementary.

### Key silage management practices are:

- Identify how much high DMD silage is needed for the system. Calculate the minimum area (1<sup>st</sup> and subsequent cuts) needed to produce this silage. Set a target cutting date. Use all remaining silage area to produce standard quality material.
- Soil test silage area every two years. Soil fertility limits silage DMD on many farms by slowing growth rates and delaying harvest date beyond heading date. Ensure adequate soil pH, P and K status.
- Apply adequate P and K to ensure grass is ready for cutting by late May. A 5 t DM/ha first cut crop requires approximately 100 kg K/ha and 20 kg P/ha to meet off-takes alone. Index 1 and 2 soils will require more for nutrient build-up later in the season. Apply sufficient N (125 kg/ha) to drive first cut yield, plus sulphur (12–15 kg/ha) where required.
- Remove dead material from the sward by grazing tight in early spring or in late autumn (for external land blocks).
- Understand that DMD drops quite rapidly once grass reaches heading date (1 to 1.5 units every three days). The crop must be harvested within 4–5 days of seed head emergence to achieve 70% DMD silage.
- A rule-of-thumb is that grass uses up two units of N (2.5 kg) per day. Fertilizer N should be applied approximately 50 days before planned cutting date. However, the crop may be harvested sooner depending on nitrate and sugar levels. Test the crop rather than delaying cutting based solely on the '2-unit rule'.
- Wilt grass to >28% DM to aid preservation if nitrate readings are high. Tedding out grass for 24 hours in dry conditions is recommended.
- Fill and seal pits rapidly and completely. Monitor pit covers and bale plastic regularly through the summer.
- Up to 10% losses are possible at feed-out. Maintain a tidy, cleanly cut pit face. Narrow pits work best to manage losses.
- Reseed silage swards using high performance perennial ryegrass varieties.