

Feeding the herd at grass – can we do better?

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Summary

- Dairy farms will have to increase both grass production and utilisation substantially to support higher stocking rates
- Autumn closing management and targeting the correct closing cover are vital to ensure adequate spring grass availability
- The importance of early turnout and spring grazing management is underestimated. For every 1% of the grazing area grazed in February, an additional 14 kg DM/ha is grown by 10th April
- The first rotation needs to be finished by early-April in order to achieve 2.5 grazing rotations by early May and 10 grazing rotations in the year
- On average, for every extra 1 t DM/ha grown, 0.88 t DM/ha was allocated to the grazing herd on Pasturebase Ireland farms in 2016.
- Post grazing sward height and pasture quality are key drivers of the feeding status of the herd during mid-season
- Grazing management requires continuous improvement

Introduction

There are major improvements needed in the areas of grazing management and the conversion of grass into milk. While every farm situation is unique with varying soil types, local climatic conditions, stocking rates and farmer management capabilities, grass production is limiting on most farms. Irish farms have expanded rapidly over the last number of years. Average herd size is now approximately 82 cows/farm, which requires farms to increase the amount of grass grown to meet an increasing herd feed demand. Increasing stocking rates and more compact calving has resulted in increased spring feed demand on dairy farms. Extra grass must be grown and utilised in this period to avoid increases in supplementary feed use. It is clear from Profit monitor results in the last two years that farms targeting high levels of grass utilisation are more profitable (+€261/ha higher net profit). Even the farms achieving the highest grass utilisation, however, are still only utilising 10t DM/ha. This paper examines where Irish dairy farms can improve the feeding management of the dairy herd at grass, to further increase output and lower farm costs.

Current Grass DM Production performance

The optimum stocking rate for an individual farm is that which gives sustainable profitability, and is dependent on the individual farm's grass growth and utilisation capability. Many Irish farms are only producing 50-60% of their grass growth capability, and substantial increases in grass production need to be achieved. Other dairy nations that have expanded without growing and utilising more grass have lost their competitive advantage. Many farmers in Ireland will fall into the same trap if grass production isn't increased. Sustainable dairy expansion must come from utilising more grass, and not at the cost of importing supplementary feed. Improved feeding of the dairy herd will only come from better grazing management skills being employed. This means regularly measuring pasture cover, using specialized grassland management software to analyse grass production data, and making decisive grazing management decisions. These are the key drivers of grass growth capacity on the farm. A recent survey of high performing grassland farmers reported that all the farmers agreed that they were completing more farm walks, grazing their cows tighter and

reseeded more than they were five years ago. This underlines the importance of continuous improvement in grassland management practices.

At present, Irish dairy farmers are growing on average 9.1 t DM/ha (National Farm Survey data), which is utilised during a grazing season that averages 210 days. This poor performance is a result of inadequate (or zero) routine grassland measurements being completed on most farms. Across all the farms that are routinely recording farm cover in PastureBase Ireland (PBI), the bottom 20 farms, the average of all farms, and the top 20 farms are growing 11.0, 13.8 and 16.7 t DM/ha, respectively (Figure 1). Variation in the amount of grass grown in the top 20 versus the bottom 20 farms in PBI is evident across the seasons: 1199 versus 816kg DM/ha in spring; 4932 versus 4462kg DM/ha during mid-season; and 6442 versus 5937kg DM/ha in autumn. An extra grazing rotation is achieved on the top farms compared to the bottom farms (7.7 versus 6.8 grazings per paddock per year). This extra grazing results in a greater proportion of grazed grass in the cows' diet.

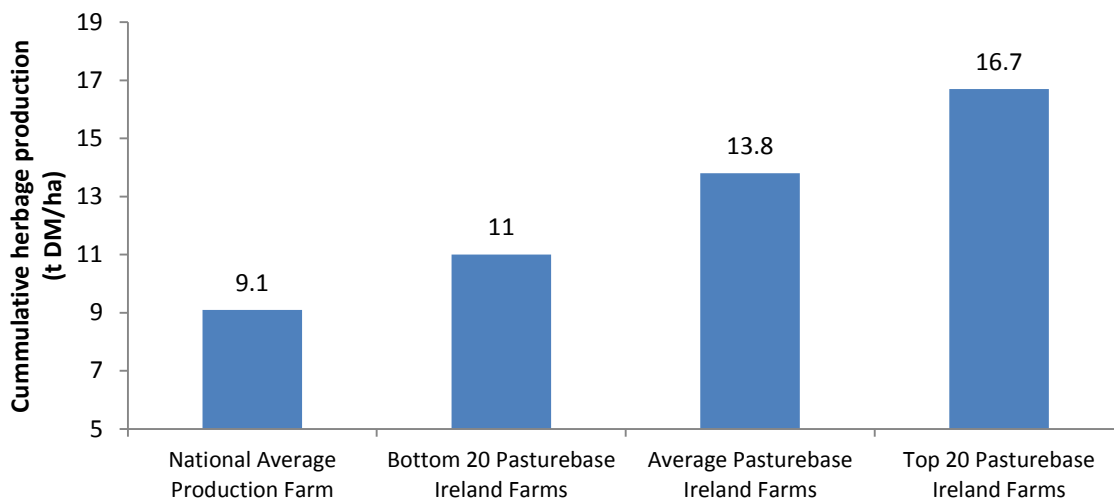


Figure 1. Comparison of National average dairy farm DM production and that of farms participating in Pasturebase Ireland

Grass allocation

On many farms, the grass grown on the milking platform is prioritised for the grazing cows, as it reduces the levels of imported supplementary feed required. Pasturebase Ireland now provides the tools to determine how much grass is grown and utilised for grazing on farms. Figure 2 shows the relationship between grazing DM production and total grass DM production on farms during 2016. On average, for every extra 1 t DM/ha grown, 0.88 t DM/ha was allocated to the grazing herd.

The relationship between grass allocation and stocking rate in grazing herds is summarized in Table 1. Farms that are not producing sufficient grass to meet the stocking rate requirement cannot allocate enough grazed grass to their herd and are forced to increase supplementation levels. Many farms in the country are facing this prospect if they don't improve grassland management to increase farm grass DM production across the year.

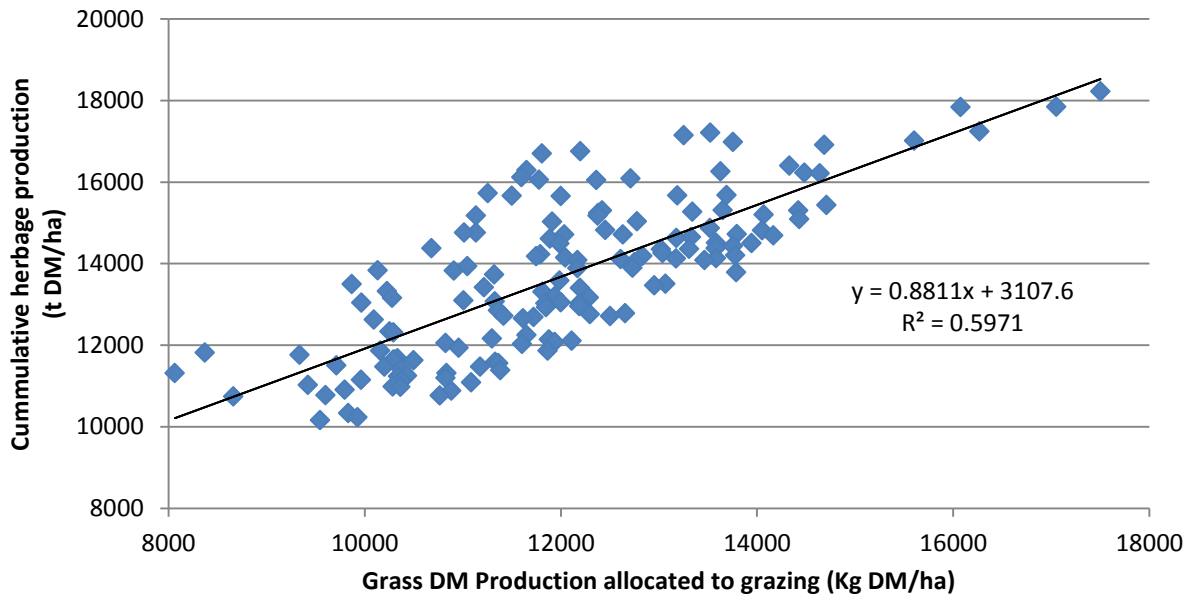


Figure 2. The relationship between farm total grass DM production and the amount of grass allocated to grazing

Table 1. Grass DM availability for the herd at different levels of DM production

Grass DM Production	Grass availability @ 80% allocated to grazing	Appropriate farm stocking rate*
9	7.2	1.8
11	8.8	2.2
13	10.4	2.6
15	12	3.0
17	13.6	3.4

*assumes 4 t DM grazed grass allowance per cow

Spring grazing management

Grazing management in the first two months post-calving determines spring grass growth and cumulative growth for the remainder of the year. Data from PBI (n=65 farms) from 2015 and 2016 shows that, on average, 22% (range 0 to 52%) of the grazing platform was grazed in February. These figures are well below the target minimum of 30% grazed by March 1st. The same dataset showed that for every 1% of the grazing area grazed in February, an additional 14 kg DM/ha was grown by April 10th. This equates to an additional 125 kg DM/ha grown on those farms. A target of 1450 kg DM/ha must be grown from January 1st to April 10th to meet the majority of the cow requirements from grazed grass. The first rotation end date can have a large impact on spring DM production. For example, PBI data indicates mean spring grass production from January 1st to April 10th was 1239 kg DM/ha on farms completing the first grazing rotation on or before April 10th compared to 994 kg DM/ha for farms completing the first grazing rotation after April 10th. This 20% difference clearly shows that some farms are finishing the first rotation too late.

Given that most farms are increasing both stocking rate and six-week calving rate, the opening farm cover has a large impact on spring grazing and herbage allocation. Opening with a low average farm cover means there is less available grass to graze. Targeting an opening farm cover of 900 kg DM/ha for highly stocked farms can be achieved to keep supplementation low. An experiment to establish the effect of opening farm cover commenced at Moorepark in spring 2017. This trial is investigating the effect of opening

farm cover on animal performance and herbage production. Preliminary results for animal performance during the first rotation (February 6th to April 8th 2017) is summarized in Table 2. Commencing grazing with a greater opening farm cover (1040 versus 650 kg DM/ha) resulted in more grass available for lactating cows (12.9 versus 9.5 kg DM/cow per day) over that 60 day period. The higher grass allocation resulted in an additional 13 kg MS/cow produced by April 8th (9% increase in milk output per cow). Each additional 100 kg DM/ha increase in opening farm cover resulted in an additional 9 kg milk solids/ha.

Ensuring a high opening farm cover and maintaining it so it doesn't drop below 500 kg DM/ha in late March/early April is a crucial aspect of spring grazing. During the spring period the farm should be walked a minimum of 4 times during February and March to ensure adequate grass is available and regrowth's are recovering to target levels. If average farm cover drops, the level of grass available for grazing animals is reduced, and levels of supplementation will increase. It is important that adequate nitrogen is spread on the farm by April 1st to stimulate early grass growth (70 units/acre, 56 kg/ha).

Table 2: The effect of high and low opening farm covers on grazing and animal performance for the first rotation (February 6th to April 8th)

	High Grass	Low Grass	Difference
Opening farm cover (kg DM/ha)	1040	650	+ 390
Grass allocation (kg DM/cow/day)	12.9	9.5	+ 3.4
Concentrate feed (kg DM/cow/day)	2.8	2.8	0
Pre-grazing herbage mass (kg DM/ha)	1533	1091	+ 442
Post-grazing sward height (cm)	3.7	3.3	+ 0.4
Cumulative milk solids (kg/cow)	151	138	+ 13

Mid-Season management

The primary objective during the main grazing season is to maintain high animal performance from an all-grass diet, while at the same time maintaining pasture quality. In general, from late April onwards, grass supply exceeds demand. Pre-grazing herbage mass should be maintained at 1300 to 1600 kg DM/ha, with a grazing residual of 50 kg DM/ha (4 cm post-grazing height). One of the biggest issues in mid-season is not stocking the farm appropriately to match grass growth, resulting in large surpluses (understocked) or large deficits (overstocked). Farm cover should be maintained between 150 to 180 kg DM/cow from mid-April to mid-August with a rotation length of 18-21 days. In order to maintain this, average farm cover should be monitored weekly and three times every two weeks during peak grass growth. Paddocks with surplus grass should be removed as identified. Improving pasture quality offers the potential to achieve further increases in animal performance from pasture. Grass quality varies across the season; however, some of these changes can be negated by good management practices. The current measure of how well grass is utilised in the field is the post-grazing sward height. In 2016, 33 farms were monitored for post-grazing height from April to September. On average, the results achieved were reasonable, but still showed that grass is being underutilised on farms. For example, post-grazing sward height increased by close to 0.5 cm in May and stayed at >4.4cm for the remainder of the year (Figure 3). This has adverse consequences for sward quality and regrowth capacity in subsequent rotations.

Maintaining high quality grazed grass has the ability to maintain milk production of 2 kg milk solids/cow per day. For each one-unit increase in organic matter digestibility (OMD), grass dry matter intake can be increased by 0.20 kg, which can result in an increase of 0.24 kg milk/cow per day. Well grazed swards (grazed to 4.0 cm) will contain a high (80% +)

proportion of leaf in the mid-grazing horizon (4 to 10cm). The proportion of leaf in the grazing horizon has a strong influence on the grass DM intake achieved by the dairy cow, so it is imperative that swards are leafy to the base. This can be achieved by good grazing management practices. Poorly managed swards (grazed >4.5 cm) can fall to 65% leaf during the reproductive period, resulting in more stem and reducing overall sward quality.

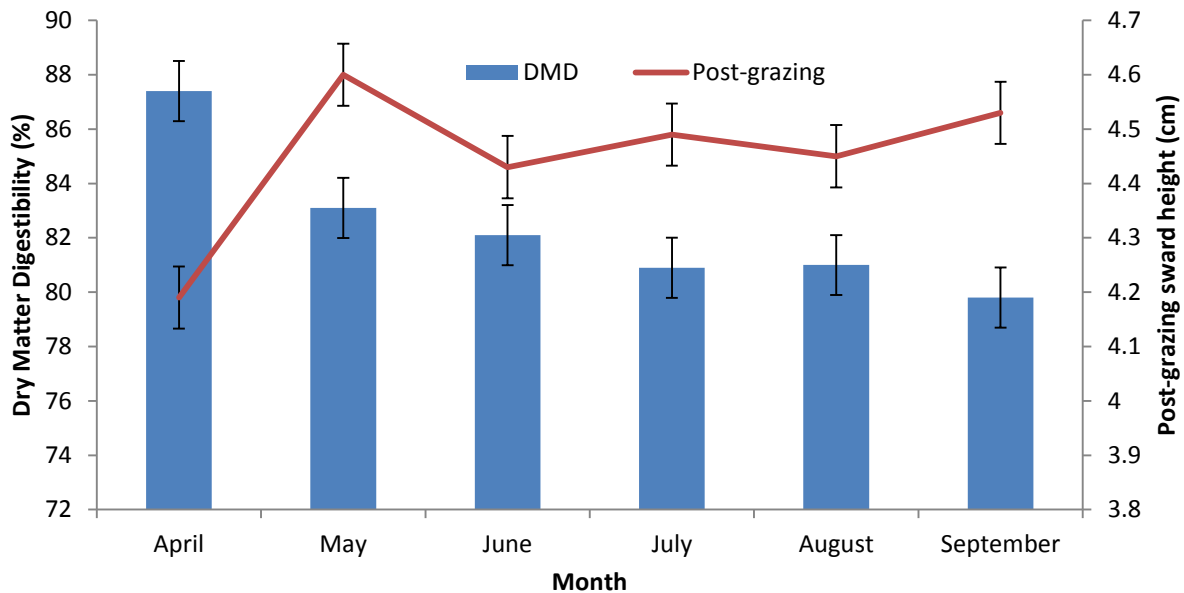


Figure 4. Post grazing sward height (red line) and grass dry matter digestibility (blue bars) measured on 30 farms participating in Pasturebase Ireland in 2016

The corresponding grass quality assessments (Figure 4) show a consistent decline in grass quality from April through to September, with no increase in any month. The big rise in the May post-grazing height was most likely due to the doubling of grass growth from the first week of May to the third week of May in 2016. The mean grass growth figures for May, June, July, and August in 2016 were 70, 76, 74 and 68 kg DM/ha/day, respectively. The increase in post-grazing height highlights the difficulty of managing grass quality when grass growth increases during mid-season.

Autumn grazing management

Autumn closing date is one of the most important management factors influencing the supply of grass in early spring. To ensure adequate quantities of grass are available at the start of calving in spring on highly stocked farms, farmers must ensure an average farm cover of ≥ 600 kg DM/ha is achieved at closing (December 1st). To achieve these targets, farmers should use the autumn planner, which allocates the area of ground to be closed from October to November. The closing of paddocks should start between 5th and 10th October, and 60% of the paddocks should be grazed by 7th November. In highly stocked farms, which have greater demand for early spring grass, this target should be 70% grazed by 7th November, with 100% grazed by the end of November. Farms with heavy soils or farms with low autumn growth rates should close approximately one week earlier. If average farm cover does drop due to poor autumn growth rates, farmers should house or increase silage supplementation to prioritise grass for early spring grazing.

Conclusion

All farms can grow more grass through improved grassland management. Managing a farm to produce more grass requires attention to detail and better grazing management. The farms that are monitoring farm cover regularly are more likely to feed their cows better at grass, achieve more grazings per paddock, improve grass production and increase farm profit irrespective of milk price.