

Effects of autumn grazing management on over-winter growth, sward quality and sward structure

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Summary

- Each one day delay in closing date after September 25th resulted in a reduction of 16 kg DM/ha in spring herbage supply.
- Earlier closed paddocks had reduced sward quality.
- In earlier closed paddocks up to three leaves per tiller can die over winter and there is higher mortality.
- Higher covers of autumn produced tillers should be grazed to a residual of 3.5 cm as early as possible in spring to remove dead material, maintain sward quality and allow for daughter tiller survival.

Introduction

Perennial ryegrass (PRG) growth is highly seasonal with little growth from November to February. With increasing herd demands in spring, Irish dairy farmers must make careful decisions on autumn closing date to ensure sufficient over-winter growth, while at the same time ensuring sward structure is not compromised. Tissue turnover is the appearance and senescence of green leaf material in the sward. A PRG plant continuously produces new leaves, with three live leaves on a plant and one actively growing at a time. As a new leaf appears the oldest leaf starts to senesce. The closed period directly contributes to the number of leaves that appear and senesce over winter, which can result in increased senesced material and reduced sward quality. Spring and autumn are the key periods for tiller production in a PRG plant. Survival of daughter tillers produced is of key importance as tillers only live for approximately a year and daughter tillers maintain continued persistence of the sward.

Autumn grazing management research in Moorepark

An experiment was established at Teagasc Moorepark evaluating over-winter growth, sward quality and sward structure in autumn 2016. Briefly three autumn closing managements Early (25th Sept–9th Nov), Normal (10th Oct–24th Nov) and Late (25th Oct–9th Dec) were evaluated. Over-winter growth rates and tissue turnover (leaf appearance and senescence and daughter tiller survival over winter) were measured every three weeks over the closed period and sward quality was measured prior to grazing in spring.

On average over the three years from autumn closing to spring opening (February 6th), every one day delay in closing from September 25th resulted in a reduction of 16 kg DM/ha/day in spring grass availability (Figure 1). At the point of spring grazing, on average, 11 kg of the 16 kg DM/ha was classified as green material in early closed swards, due to the higher level of senesced material. Senescent material was significantly higher in earlier closed paddocks compared to the late closed paddocks (71% vs. 76%). The higher level of senescent material on the early closed paddocks was as a result of increased leaf appearance and senescence. The early closed treatments on average produced three times more leaves than the late closed paddocks, which accounted for the increased herbage mass in spring, however it also had a greater level of leaf death, with 50% of new leaves dying. Early closed paddocks also had reduced sward quality at spring grazing compared

to later closed paddocks (OMD of 831 and 847 g/kg DM respectively). Daughter tillers produced in autumn in early closed swards showed high mortality rate swards (Table 1). It has previously been reported that earliest closed sward should be grazed by mid-March the following spring to reduce the negative impact on sward quality. However this is also the case for tillering, as tillering increases again in spring; and to ensure a higher rate of survival in spring daughter tillers, swards with high levels of herbage mass should be grazed early to allow light in to the base.

Table 1. The effect of autumn closing date (Early, Normal and Late) on green leaf mass, leaf appearance and senescence and daughter tiller mortality over winter

Autumn Closing	% Green Leaf	No. of leaves grown	No. of leaves senesced	Daughter tiller mortality
Early	71%	6	3	35%
Normal	72%	4	1	14%
Late	76%	2	0	9%

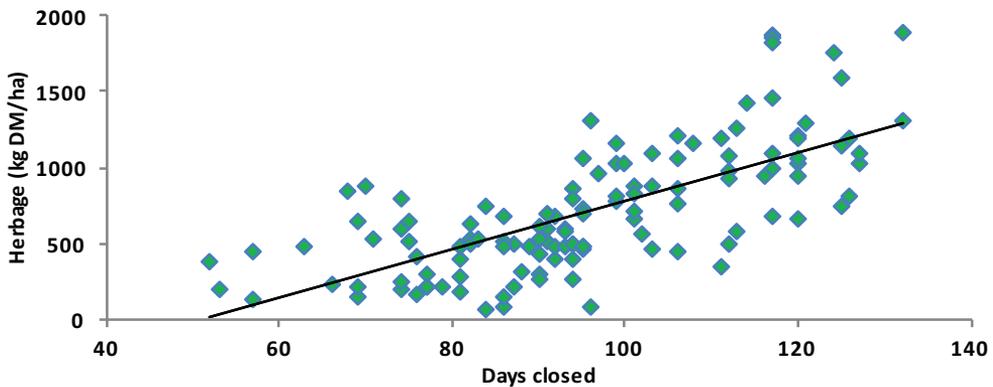


Figure 1. The effect of autumn closing date on spring grass availability (kg DM/ha)

Conclusions

Earlier closing of swards resulted in an increased level of herbage mass availability for grazing in spring. To ensure there are no negative effects on the sward and the best quality grass is fed to freshly calved cows, paddocks closed earlier in autumn should be prioritised for grazing earlier in spring to remove senescent material from the sward base and aid daughter tiller survival and persistence.