

Grass growth profiles in Brittany

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Introduction For farmers, knowing the local grass growth profile and the possible variations between years is very helpful in managing grazing. Indeed, the comparison with herd needs and anticipated farm cover change allows decisions to be made that will maintain the cover at the desired level. This paper proposes a ten-days grass growth profile corresponding to Brittany's different conditions of soil, climate and pasture management.

Materials and methods Grass growth data were used from seven years (1997-2003) of "Pâture Plus", a communication campaign on grazing management run in Brittany. On 20 farms per year (47 total), the height of all the paddocks (75% of perennial ryegrass and white clover mixtures and 25% of pure perennial ryegrass) was measured weekly from February to November with a rising plate meter. Grass growth in a paddock between two measurements was defined as $GG_w = (\Delta H * D_w) / \Delta t$ where GG_w = grass growth of the paddock in week w (kg DM/ha per day), ΔH = Height difference between two measurements (cm), D_w = sward density in week w (kg DM/cm per ha) (Defrance et al., 2004) and Δt = time between two measurements.

The database was composed of 3397 pieces of growth data, defined as the average grass growth on all the paddocks of a farm neither grazed nor cut between two measurements, weighted by the paddock areas. Farms were classified into two zones in spring (February to May), favourable or unfavourable, and into three zones in summer (June to September), humid, intermediate or dry, according to the comparison between the farm growth profile and the average profile. No zones have been distinguished in autumn (October and November). Each period was analysed separately, taking in account the year, zone, farm within zone, ten-days period, the interaction between zone and ten-days period and the initial grass height centred within ten-days period. Except for the interaction in spring, all these factors were significant at 1% level.

Results and discussion The average growth is 39.1 kg DM/ha per day for an initial height of 7.2 cm. Models explain 60, 51 and 34 % of the total variability in spring, summer and autumn, respectively. In spring, growth increases from 11 in February to 71 kg DM/ha per day in mid-May with an average difference of 11 kg between the two zones. For both of them, mid-April is characterized by a growth deficit in accordance with a temperature deficit usually observed at this time. In summer, growth decreases in the three zones but much more strongly in the dry zone (reaching 0 at the beginning of August) than in the humid zone. The growth recovery in September is delayed in the dry zone. Average initial height at farm level is positively correlated with grass growth. This is 2.6, 3.2 and 1.2 kg DM/ha per day higher per additional centimetre in spring, summer and autumn, respectively.

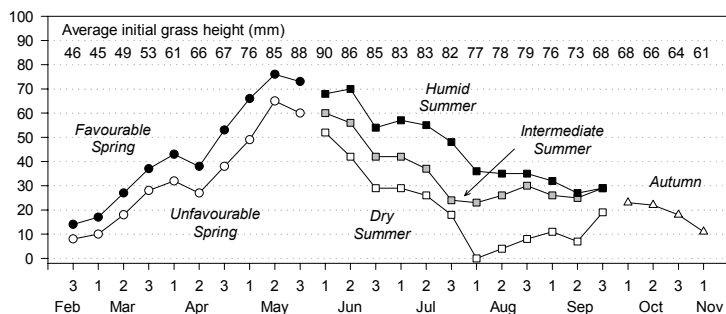


Figure 1 Ten-days grass growth (kg DM/ha per day) profiles in Brittany according to different soil and climate conditions in spring, summer and autumn and corresponding initial grass height (mm)

Conclusions This work has revealed the different grass growth potentials existing in Brittany, from 6.7 t/ha on average, in a farm with unfavourable conditions in spring and humid conditions in summer to 10.8 t/ha in a farm with favourable conditions in spring and humid conditions in summer. Furthermore, these profiles will be used within the "Agrotransfert Bretagne" project to develop user-friendly tools for grazing management.

References

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