Pâtur'IN: a user-friendly software tool to assist dairy cow grazing management

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Introduction The feeding of dairy cows at pasture presents many technical, economic and environmental advantages, while benefiting from a very favourable image. However, the management of grazed land is a complex game of strategy in which the farmer applies decisions in order to manage two unstable and uncertain fluxes of change: growth of grass and intake of the herd. Many tools (platemeter, etc.) and overall methods (local stocking rate references, farm cover, etc.) have been developed as aids to grazing management. Nevertheless, few decision-support systems are currently available that make it possible to anticipate and assess the consequences of a given decision in a dynamic way (Peyraud *et al*., 2004). The objective of this article is to present the structure and functions of Pâtur' IN, a software tool designed to help the management of dairy cow grazing.

Structure and functions of Pâtur'IN After defining the structure of the farm, which comprises the plots, herds and available feed supplements, the user can, on the one hand, record all the events taking place on the farm during the grazing season and then, on the other hand, simulate various scenarios of sward use. A scenario consists of a succession of events (grazing, cutting, fertilisation, etc.) that act on the "Growth" and "Intake" functions according to rules of decision defined by the user (Figure 1). The "Growth" function makes it possible to calculate the biomass present on each day starting from a standard growth grid that can be modified by the user according to the local context. This grid is then adapted to each plot for each day using various models integrating the effects of climatic conditions, N fertilisation, amount of biomass present, etc. The "Intake" function calculates the quantities of grass ingested by the herd based on the intake capacity of the cows (INRA, 1988) and adapted to the characteristics of the pasture (sward height, pasture allowance, etc.). During a simulation, the user defines a set of rules of decision as well as the order of use of the plots. From this, the software program can determine, for each grazed plot, either the residence time in a rotational grazing system, or the land area to be offered each day in a strip grazing system. The user interface (Figure 1) allows a visualisation of the condition of each plot for each day, by means of various colours and the display of simulated events in the form of a grazing schedule. The whole set of results for a given simulation is available in the form of text file. Pâtur' IN can be run on a PC and is now available in an English version.

Conclusion The advantage of Pâtur'IN is that it makes use of data available at farm level, thus enabling farmers to carry out regular updating of the data according to the actual progression of the grazing season. In this way, users are able to develop simulations adapted to the particular context of each farm.

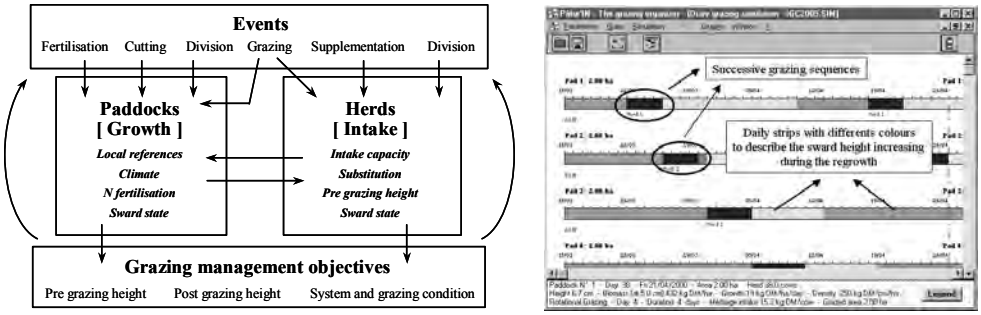

Figure 1 A graphical representation of the events and functions used in Pâtur'IN software tool and a screen copy of the user interface

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