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# Functioning of Pastoral Goat Farms

## Methodological contribution of a research and development group

M. NAPOLEONE

### Introduction

A research and Development group in south-eastern France is searching for information that could help towards the development of pastoral goat farming. This aim has led it to ask questions on the processes of production and to develop methods of considering and discussing these processes with the parties involved. This article describes the approach used to understand the strategy of goat farmers and to assess the effectiveness of their actions. A critical look will then be made of the conditions in which this approach could be useful in terms of action.

### 1. The context

The study was conducted on goat farms specialising in milk production and using pastoral areas. Although most of them process their production into farmhouse cheese which they market themselves, their herds (size, breeds and composition) and management methods differ from one another (Napoléone and Hubert, 1989). Faced with a diversity of practices,

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which reflects a diversity of production goals, how can pertinent information be gathered that could help in improving the effectiveness of the herd management methods? This question was the motive behind the creation of a Research and Development group. To take into account the diversity of ways of operating and to include the mechanisms of adapting these systems, monitoring was carried over several years on a network of 10 to 15 farms.

## **2. Understanding the farmer's strategy**

Obtaining pertinent information with respect to a production process leads to the question being posed of "Why does the farmer do what he does?" (Russell *et al.*, 1989).

Although it is relatively easy to ask a farmer what he does (method), finding out why he does it (opportunity) and how he assesses the result (effectiveness) (Landais and Deffontaines, 1988), it is more difficult to understand the concepts that underlie these practices (Darré *et al.*, 1993). We therefore asked the question of how to pass from a practice which has a reason that can be expressed, to understanding the logic that underlies the production process. This latter is however frequently implicit and difficult to discern by simple questioning. On the other hand, it does determine the way in which the farmer organises his herd management, implements his practices and reacts if the result is unsatisfactory. We therefore looked to see whether there was any coherence in the various practices by modelling the relationship between changes in management practices and those of herd production. This coherence is called the management strategy. Three questions guided our understanding:

- When do changes in practice occur and what changes?
- When do notable changes in production occur?
- Are these changes in practice foreseeable or are they a reaction to a situation assessed as unsatisfactory?

Our approach consisted of three stages which will be illustrated by the example of a goat rearing unit of 40 goats, producing 650 kg of milk per goat per year, using about 50 ha of scrubland, 150 to 200 ha of wooded rangeland and 2 ha of arable land.

### **2.1. Getting to know and describing practices and herd production**

Particular interest will be given to feeding practices (food supplied indoors and grazing) and to production (milking, weaning, etc.).

To have an idea of the herd management, relevant indicators were selected. Thus, grazing land units were considered rather than vegetation units which were irrelevant for our purpose (Hubert *et al.*, 1989). The total quantity of milk produced each day represents an indicator of yield. This is used by the cheese producing farmer as a daily measure by which he assesses his production. It has the advantage of being not at the level of the individual animal, but at the level of the herd - the level that the farmer refers to for his management. The farmer recorded in a logbook the feed supplied while the animals were housed (type and



quantity), the pasture units used (which ones and the state they were in), and the daily herd production.

To identify the temporal sequence of events, changes in feeding practices were represented in a synchronous manner together with changes in herd milk output, according to the approach proposed by Guérin and Bellon (1989). This representation (fig. 1: *representation*) needs no interpretation. It provides a concrete image of the practices used, serving as a reference for discussions with the farmer.

## 2.2. Characterising this representation

The characterisation depends on the determination of the timing of changes (decisions to change management or changes in the milk yield curve) and of periods of stability.

Thus, the representation of the grazing practices revealed three main sequences: from March to June grazing on meadows and scrub, from July to September using woods and then in autumn a return to the spring areas. Similarly three sequences of production were characterised: a plateau in spring, a fall from June to September, and an end of lactation from September onwards (fig. 1).

Within these main sequences it is possible to identify the implementation of decisions of a tactical nature that do not call into question the aims of the period, and to detect variations in the persistence of lactation that do not change the overall kinetics of the period. These tactical decisions delimit stages of stability within the sequences.

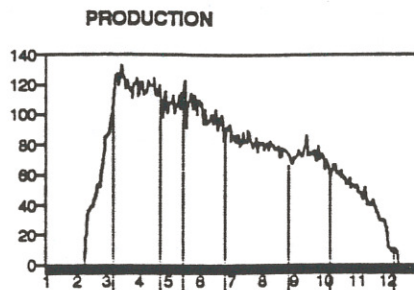
Thus four decisions orchestrate the spring grazing sequence. To be able to spend four months on these areas, the farmer first puts the herd out to grass on a meadow managed on a quick grazing rotation basis. Then a period is spent on clover and on scrubland while awaiting regrowth of the grass, followed by a second grazing rotation on the meadow. From April, the mid-spring grazing combines use of the meadow forage resources and selective grazing on the scrubland, and at the end of spring, woodland replaces the scrubland (Madrigal, 1993). Similarly the spring plateau of lactation can be divided into a first plateau until mid-April, followed by a sharp fall in production (minus 10% in 3-4 days), then a second plateau that finishes at the end of May before a persistent major fall in early June.

## 2.3. Interpretation: give a meaning to the characterisation of the production practices

Analysis of the series of sequences and the stages of grazing management and production, and the timing of changes, by studying the temporal correlations (fig. 1: *organisation*) provides an interpretation of the logic behind the decisions taken and therefore enables the strategy to be identified. This also enables to identify those times that pose problems in terms of realising herd production and therefore enables a diagnosis of the effectiveness of the practices with respect to this realisation.

The production strategy of this farmer seems to be to maintain the spring milk yield plateau for as long as possible, by management of the meadows and scrubland, before moving

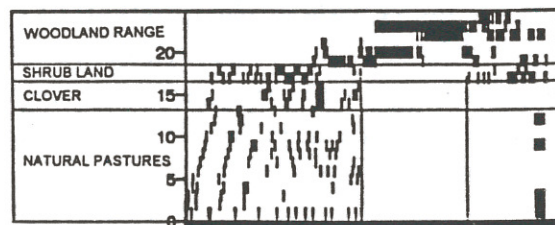
1 Representation



2 Characterisation

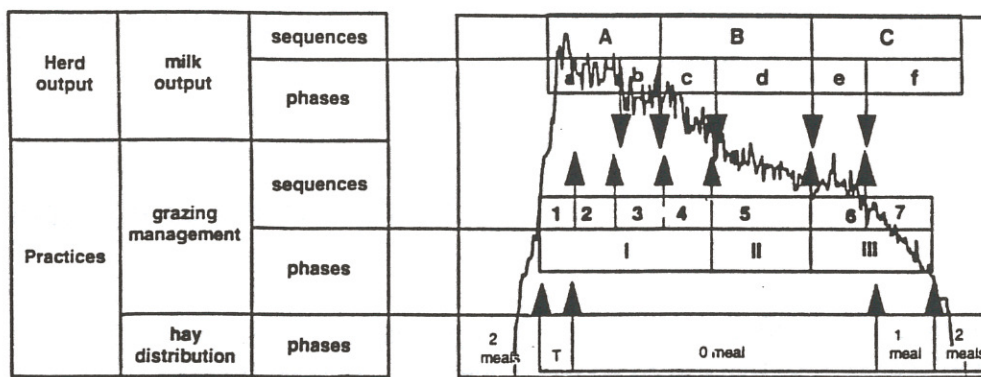
sequences	A			B			C		
phases	a	b	c	d	e	f			

GRAZING



CHANGES	R1			R2			R3		
SEQUENCES	pastures & rangeland			woodland			wooded pastures		
DECISIONS	D1	D2	D3					D4	
PHASES	1	2	3	4	5	6		7	

3 Organisation



Changes

- R1 - turnout to grass
- R2 - grazing in woodland only
- R3 - return to spring grazingland

Decision

- D1 - grazing of clover to await the 2nd rotation
- D2 - end of rotational grazing
- D3 - woodland grazing replaced by open rangeland
- D4 - return on pastures

Phases

- 1 - 1st rotation
- 2 - 2nd rotation
- 3 - spring grazing on a small number of pastures associated with open rangeland and/or clover.
- 4 - end of spring: grazing on a few grassland and woodland units
- 5 - woodland only
- 6 - end of summer: woodland and open rangeland
- 7 - autumn: return to spring pastures (woodland).

Figure 1. The coherence between practices and output



to the woods in summer, a period during which milk production is maintained at around 2 kg/goat/day by adopting varied grazing circuits. After attempting to delay the drop in milk yield and end of lactation at the end of summer, the farmer seems to prepare for the next season by cleaning up the enclosed fields and fattening up the animals if they need it. This strategy involves the implementation of specific grazing management (putting out to grass early, rotational grazing in spring, a transition on meadows and scrubland at the end of spring, etc.).

Diagnosis: The observation of the herd milk yield graph shows two times of abrupt change. The first occurs at the end of April, with a 10% fall in milk yield in a few days, coinciding with the end of rotational grazing on the meadows. The second extends over the whole of June, when some animals stop lactating. This is the late spring period. It seems as if the farmer is trying his utmost to prolong the use of the spring areas, even if it means that he is forced in late spring to graze on land where the resources are becoming scarce. If this loss of milk yield poses problems for the farmer (this is the time of year when demand for cheese increases), what can he do to better get past this period? Various options could be envisaged by the farmer: manage the spring areas differently to improve their availability at the end of the period, or look for specific forage resources for this tiding-over period.

From the animal production viewpoint, this analysis implies that questions be asked about within-herd variability and the production behaviour of individuals, in other words how do the various types of animal participate in the herd milk output.

### 3. Discussion and conclusions

The aim of the approach presented here is to describe and formalise information so as to make it sufficiently communicable and concrete to be of use in discussions with the farmer.

Through a "raw" graphical representation, without any interpretation, an attempt has been made "to make the information legible and public" in the sense of Chambers (1992), thus avoiding giving this representation, which is the basis of discussion, a meaning that belongs to us and which would be imposed on the farmer before he could formulate his own views. The representation aims at playing the role of maps or diagrams through which Chambers bases his actions of participatory development, "assistance able to point the finger, to discuss, manipulate and change physical representations". A clear formalisation of the deductive pathway from which we identify a strategy seems to be a major condition for the farmers with whom we are talking, giving them access to the understanding of an interpretation which is not their own, and which can therefore be discussed. We think that it is therefore important to build this reasoning from a characterisation of the graph, since this constitutes our basis of exchange with the practitioner.

This discussion around a graph leads both parties jointly towards identifying and formulating the problem areas in the grazing management system. The interpretation in terms of strategy therefore leads us to make relative technical assessments of the effectiveness of the practices.



Up until now this research has emphasised the understanding of the production processes and the means of formalising our reading of these in order to make a statement that can be discussed with the farmer. This work does however aim at strengthening the capacity for farmers to make self-diagnoses, and of farm technicians to give advice. It must therefore be re-appropriated by the participants themselves. But, the approach that we have just presented leads to characterisation of the situation drawn up by the research worker, from which the farmer finds his position. At present this discussion constitutes the end of the analysis. Although the graphical support calls upon the farmer's involvement and helps in the exchange of ways of seeing the issues, the farmer's viewpoint is not included throughout the process of drawing up information on the functioning of these grazing systems. The research is currently being oriented towards a more participatory approach, integrating the farmer's viewpoint as such in the elaboration of the information, on the principle that co-production is a factor of appropriation.

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