

DW N° 06: MANAGEMENT OF DAIRY COW RATIONING

1. Principles of feeding dairy cows:

The main rules governing the feeding of dairy cows stem from three observations:

- The production cycle of the dairy cow (DC) is closely linked to its reproductive cycle.
- The appetite of the VL characterized by its ingestion capacity is not always sufficient to allow it to satisfy its needs, particularly at the beginning of lactation.
- Fodder, the basic food of the VL, does not, in most cases, allow to meet significant expenses due to high levels of milk production.

1.1. The production cycle of the dairy cow:

The dairy cow's production cycle is based on the following theoretical rhythm: 10 months of milk production (lactation). Followed by 2 months of mammary rest (drying off).

This production cycle, corresponding to a 1-year reproductive cycle, is characterized by the production of a calf/cow/year. During the 10-month lactation period, we can distinguish two main phases:

- * A first phase (ascending): During which the daily production increases rapidly to reach the maximum level of production. *Peak lactation or Peak production*. This phase lasts approximately 1 month.
- * A second (decreasing) phase: It is longer or more important in duration improperly called "*Mid-Lactation*", during which production decreases more or less regularly, this is the decreasing phase.

2. Principle of rationing:

Rationing an animal consists of satisfying its nutritional needs by adjusting sufficient, balanced food intake, adapted to its digestive faculties and as economically as possible. For this, we have tables indicating:

- On the one hand, the accepted standards for nutritional needs for maintenance and production.
 - On the other hand, the average composition of the various foods that can be used;
- It is enough to achieve by calculation, the theoretical balance between needs and contributions.

3. Calculation of rations:

To establish a herd's ration, we need to have 3 documents:

- A table of requirements, indicating the dairy cow's requirements in MS, UF or UFL,

UFV MAD, PDI, calcium and phosphorus....

- A table of fodder values.
- Calculation sheets on which the figures taken from the tables will be entered.

Rationing of dairy cows is based on the following principles:

a- / Calculation of cumulative nutritional needs:

These are the “basic” needs, common to the entire herd;

- Maintenance based on the average weight of the cows (very often 600kg).
- Production; calculated on the herd average, this depends on the level that it is desirable to cover without distributing concentrates:
 - Average herds = 10 to 12 liters.
 - Good flocks = 14 to 16 liters

b- / Determine the nutritional contributions of the basic ration:

- The breeder tries to obtain a balanced basic ration, only with the coarse feed he has available, without using concentrates (this is always preferable for economic reasons), he combines several fodders for example:
 - Legume hay + beetroot; Grass
 - hay + fodder cabbage.

If necessary, it includes a balancing supplement rich in nitrogen or energy depending on the

MAD/UF and possibly a mineral and vitamin supplement (CMV) specially designed to ensure this minimum level of effectiveness.

-- Calculating the sum of the nutritional contributions of the basic ration becomes easy, knowing the quantities consumed and the composition of the food using the nutritional value tables. Once the maintenance needs of the animal have been deducted from the contributions of the basic ration, we can judge the ability of this ration to cover a more or less high level of milk production: *We can determine the milk production allowed by UFLs and the production allowed by PDIs.* The ration is balanced if these two figures are the same to within 1 or 2 liters.

C-/ An emergency food: The balance corrector:

- If the breeder cannot achieve balance with the fodder available (UFL or PDI deficiency), this unbalanced ration must be corrected with a concentrated feed rich in this deficient element: *"balance corrector" Or "balanced complementary food":*

* If the ration is deficient in MAD, the MAD/The corrector's UF must be high: We will choose

a crab for example: PDI/UFL=380.

* If the ration is deficient in UFL (in this case it is the energy which decides the potential of the ration), the PDI/UFL of the corrector must be low. We will choose cereals, for example barley: PDI/UFL=65.

d-/ Add the "production supplement" or "production concentrate" or "additional ration":

- Beyond the production permitted by the UFLs and the PDIs provided *through the basic ration and the balanced feed*, The breeder must stop distributing this corrector, otherwise it moves away from balance again.

- It must distribute a feed that exactly covers the needs of the additional liters of milk: As 1 liter of 4% milk requires 0.4 UFL and 50g PDI, i.e. one MAD/UF=116, the food to be distributed must have a PDI/UFL of 116). It is *balanced production feed or balanced feed for dairy cows.*

Exercice

- 1) Calculate the maintenance and production requirements of a dairy cow producing 5kg of milk at 2% fat content and with a standard weight of 600kg.

- 2) Calculate the total requirements of a dairy cow, weighing 500kg, producing 15kg of milk at 4% fat content?

- 3) Calculate the total requirements of a 1st lactation dairy cow weighing 550kg and producing 10kg of milk at 3.3% fat content?