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EFFECT OF THE FEEDING METHOD OF A COMPLETE PELLETTED FEED (UNIPellet) AS SUPPLEMENT OF GRAZING IN DAIRY EWES⁽¹⁾

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SUMMARY

This trial was carried out to compare, in grazing ewes, two feeding techniques of the Unipellet, which is a complete pelleted feed with a high un-milled fibre content and a high energy concentration, obtained using fatty acid calcium soaps. 100 Sardinian dairy ewes were divided in 2 groups (A and B) and fed, during 10 weeks, at grazing during the day + either 500 g/d of Unipellet (group A), given twice/d at milking time, or Unipellet ad libitum during the night (group B). The group A ate completely the Unipellet supplied (454 g/d of DM), whereas the group B ate as average 1241 g/d of Unipellet (1121 g/d of DM). The milk yield did not differ significantly between the two groups (g/d 1507 vs 1414). The milk fat content was higher in the group B (5.89% vs 6.31%, $P \leq 0.01$) whereas the milk protein content and the somatic cells count did not vary at all. The body weight increased more in the group B (+3.79 kg vs +5.73 kg, $P \leq 0.01$).

Keywords: Dairy ewes, Feeding, Unipellet.

RIASSUNTO

Effetto della tecnica di somministrazione di un alimento completo pellettato (Unipellet) nell'alimentazione di pecore al pascolo

Questa prova sperimentale è stata condotta per confrontare due tecniche di somministrazione dell'Unipellet nell'alimentazione di pecore al pascolo.

100 pecore di razza Sarda sono state divise in due gruppi omogenei (A e B) e alimentate, per 10 settimane, al pascolo durante il giorno e con una integrazione o di 500 g/d di Unipellet (gr. A), somministrato due volte al giorno in corrispondenza delle 2 mungiture giornaliere, oppure di Unipellet ad libitum durante la notte (gr. B).

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Il gruppo A ha sempre utilizzato completamente l'Unipellet somministrato (454 g/d di s.s.) mentre nel gruppo B l'ingestione media di Unipellet è stata di 1241 g/d (1121 g/d di s.s.). La produzione latte non è stata significativamente differente tra i due gruppi (g/d 1507 vs 1414). Il contenuto lipidico del latte è stato significativamente più alto nel gruppo B (5,89% vs 6,31%). Il contenuto proteico del latte e la conta cellulare non sono state significativamente differenti tra i due gruppi. Il peso vivo è aumentato significativamente di più nel gruppo B (+3,79 kg vs +5,73 kg).

Parole chiave: Pecore da latte, Alimentazione, Unipellet.

INTRODUCTION

The feeding of dairy ewes in the Mediterranean area is based on grazing. When the grazing is poor, it is necessary to supply concentrates, which usually are given twice a day at milking times. When used in high amounts the concentrates partially substitute the grass; this causes a decrease in the fibre content of the ration which may produce digestive and metabolic disorders and decrease the milk production. With the aim of resolving this problem Rossi et al. (6) have produced a complete pelleted feed (UNIPELLETT) which can be used either as sole feed, even *ad libitum* (2) (3) (5) (6) (7), or as grazing supplement (4) (7), depending on the availability of the pasture. This goal was attained by producing pellets which have a high un-milled fibre content and a high energy concentration, obtained using fatty acid calcium soaps (Megalac (R)). In a previous trial (4) some dairy ewes were fed at grazing during the day + Unipellet *ad libitum* during the night. They had a good milk yield but a too high intake of Unipellet, which caused a reduction of the grass intake and excessive fattening. Moreover the high fibre content of the Unipellet resulted in too long eating time: this fact avoids the feeding of Unipellet at milking and means that Unipellet has to be given the night. For these reasons another type of Unipellet has been produced (Release 2= R2); it has a lower content of cell walls and so a faster eating time. The R2 has been already used *ad libitum*, as sole feed, in dairy lactating ewes, in which gave positive results (8). In order to study the possibility to supply the Unipellet R2 at milking time in rationed amounts, we carried out a trial comparing the *ad libitum* feeding during the night to the rationed feeding at milking time.

MATERIAL AND METHODS

100 Sardinian dairy ewes were divided in 2 groups (A and B) of 50 each one and fed at grazing during the day. The group A received at milking time (twice a day) 500 g/d as feed of Unipellet. The group B received Unipellet *ad libitum* during the night. The trial lasted 14 weeks, of which 2 preexperimental and 12 experimental. The individual milk yield, the body weight and the intake of each group were checked

every 2 weeks. The chemical composition of grass grazed and of Unipellet was analysed by ASPA (1) methods. The milk fat and protein (N x 6,38) content was analysed by IRMA Milkoscan 605, while the somatic cells count was measured by Fossomatic 306 instrument.

RESULTS AND DISCUSSION

The chemical composition of grass grazed and of Unipellet is showed in table 1. The fall in the quality of the grass as the dry season approached should be noted. The ewes of group A ate completely the Unipellet given (500 g/d x head, corresponding to 454 g/d x head of DM). The ewes of group B ate as average 1184 g/d from 1st to 4th week, 1186 g/d from 5th to 8th week and 1352 g/d from 9th to 12th week (corresponding to g 1070, 1071 and 1221 of DM respectively). It was not possible to measure the grass ate by ewes, but probably the lower intake of Unipellet in the group A was offset by a higher intake of grass. The milk yield did not differ significantly between groups in the whole trial (kg 126.6 vs kg 118.8); only in the 2nd period there were differences (kg/d A=1.762, B=1.482, $P \leq 0.01$). The average milk fat content was higher in the group B (5.89% vs 6.31%, $P \leq 0.01$), due to the higher intake of Unipellet and so of fatty acid calcium soaps. The average milk protein content did not differ significantly between groups (5.62% vs 5.54%); only in the 3rd period there were differences (5.71% vs 5.45%, $P \leq 0.05$). The somatic cells count, statistically analyzed after a logarithmic transformation, did not differ at all (n x 1000 ml 2686 vs 2966). The body weight variations were positive in both groups, but significantly higher in the group B (kg 3.79 vs kg 5.73, $P \leq 0.01$), due to the higher intake of Unipellet.

Table 1 - Chemical composition of feeds (%).

| | GRASS 1ST MONTH | GRASS 2ND MONTH | GRASS 3RD MONTH | UNIPELLET |
|--------------------|--------------------|--------------------|--------------------|-----------|
| Dry matter | 22.38 | 19.50 | 19.52 | 90.34 |
| Crude protein | 14.26 | 13.74 | 10.46 | 16.57 |
| Ether extract | 3.73 | 3.80 | 3.26 | 6.95 |
| N-free extract | 52.40 | 50.93 | 50.65 | 49.85 |
| Ash | 11.78 | 10.55 | 10.41 | 9.97 |
| Crude fibre | 17.83 | 20.98 | 25.22 | 16.66 |
| NDF | 40.66 | 45.96 | 56.44 | 35.30 |
| ADF | 20.65 | 24.00 | 30.91 | 21.50 |
| ADL | 2.52 | 2.94 | 4.78 | 4.35 |
| Acid insoluble ash | 2.71 | 3.85 | 3.09 | 0.60 |

Table 2 - Milk yield and composition.

| PERIODS | Milk yield (g/d) | | Milk fat (% vol.) | |
|-----------------|------------------|--------------|-------------------|---------------|
| | A | B | A | B |
| Preexperimental | 1581 ± 369 | 1465 ± 483 | | |
| 1° | 1607 ± 372 | 1556 ± 581 | 5.76 ± 0.60 | 5.91 ± 0.78 |
| 2° | 1762 ± 437 | 1482 ± 531** | 5.96 ± 0.73 | 5.73 ± 0.60 |
| 3° | 1679 ± 431 | 1547 ± 614 | 5.45 ± 0.77 | 5.98 ± 0.96** |
| 4° | 1526 ± 393 | 1502 ± 594 | 5.84 ± 0.64 | 6.79 ± 0.91** |
| 5° | 1362 ± 430 | 1300 ± 504 | 6.06 ± 0.74 | 6.65 ± 0.96** |
| 6° | 1089 ± 330 | 1164 ± 505 | 6.24 ± 0.87 | 6.83 ± 1.20** |
| Average | 1507 ± 363 | 1414 ± 523 | 5.89 ± 0.60 | 6.31 ± 0.71** |

| PERIODS | Milk protein (% vol.) | | Milk SCC (n* 1000/ml) | |
|-----------------|-----------------------|--------------|-----------------------|------|
| | A | B | A | B |
| Preexperimental | | | | |
| 1 | 5.65 ± 0.46 | 5.53 ± 0.50 | 2523 | 1713 |
| 2 | 5.65 ± 0.60 | 5.61 ± 0.44 | 2611 | 2514 |
| 3 | 5.71 ± 0.56 | 5.45 ± 0.65* | 3700 | 3408 |
| 4 | 5.48 ± 0.48 | 5.51 ± 0.60 | 2609 | 3663 |
| 5 | 5.63 ± 0.60 | 5.53 ± 0.67 | 1965 | 3159 |
| 6 | 5.57 ± 0.59 | 5.65 ± 0.73 | 2550 | 3445 |
| Average | 5.62 ± 0.46 | 5.54 ± 0.50 | 2686 | 2966 |

* P ≤ 0.05; ** P ≤ 0.01

Table 3 - Body weight and body weight variations of the ewes.

| | A | B |
|--------------------------------------|--------------|---------------|
| Preexperimental body weight (kg) | 42.5 ± 6.0 | 44.3 ± 6.1 |
| B. W. variations between periods: | | |
| 2-prexp. | 4.12 ± 1.29 | 3.49 ± 2.89 |
| 4-2 | 0.35 ± 1.32 | 1.29 ± 2.34* |
| 6-4 | -0.89 ± 1.09 | 0.91 ± 3.16** |
| 6-prexp. | 3.79 ± 2.23 | 5.73 ± 3.56** |

* P ≤ 0.05; ** P ≤ 0.01

CONCLUSIONS

The rationed feeding of Unipellet gave, compared to ad libitum feeding, the same milk yield but a lower consumption of Unipellet and fattening of ewes. Therefore when there is a good availability of grazing the rationed feeding of Unipellet should be preferred and the feeding at milking time enables the ewes to eat enough Unipellet R2 to meet their requirements.

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