

**INFLUENCE OF AD LIBITUM FEEDING 5 WEEKS AFTER PLUCKING
ON WOOL PRODUCTION IN ANGORA RABBITS**

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In France, Angora rabbits are generally reared with a restricted feeding program (ROUGEOT and THEBAULT, 1984). In other hand, some experimental results have demonstrated a real increase in wool production with ad libitum feeding : + 9.2 % (SCHLOLAUT and LANGE, 1983) to + 14.7 % (ROUGEOT and THEBAULT, 1977). Nevertheless, the ad libitum feeding is not employed, in practice, because of the higher fatal incidence of trichobezoards, with such a feeding technic, mainly during the last weeks preceding wool gathering.

Our purpose is to study the effect of ad libitum feeding practiced only during the 5 first weeks after plucking. Effectively, during this period, the length of hair is short (maximum 2 cm) and then does not create trichobezoards ; moreover this period corresponds to the maximum daily production of wool (ROUGEOT and THEBAULT, 1984), and consequently the maximum nutrients requirements. During this period, because of the sparse hair cover, the maximum heat wasting is also observed inducing a greater energy requirement than later (VERMOREL et al., 1988).

MATERIEL AND METHODS

After the wool plucking carried out in march, 31 adult angora females of french type, were fed ad libitum during 5 weeks with the pelleted diet INRA 545 (CHARLET-LERY et al., 1985). This diet provide as percent of dry matter : 17.8 % proteins, 3.1 % lipids, 15.7 % crude fiber and 2740 kcal digestible energie/kg DM. Then, during the 9 weeks preceding the next plucking, rabbits were feed on a restricted basis : 1100 g/week for 5 weeks and 1000 g/week for the last 4 weeks, always distributed on 6 days only. During the same period, 31 control angora rabbits were fed according to the classical limited feeding program : 1200 and 1100 g/week for 5 weeks each, and then 1000 g/week for 4 last weeks.

After the first experimental plucking in July (spring wool production), the same experimental scheme was performed until the next plucking in october (summer wool production). Then, the study was spread on 2 plucking intervals of 14 weeks each. After the "July" plucking, 6 females were added to the experimental group to replace eliminated animal (ill or dead).

Feed intake was controlled 3 times a week during ad libitum feeding ; live weight of rabbits was controlled 5 weeks after plucking. Wool production was registred for each plucking. Temperature was continuously registred during the ad libitum feeding inside of a representative cage, free of animal.

RESULTS AND DISCUSSION

During the summer ad libitum feeding period, the temperature was higher and more variable than during spring (table 1).

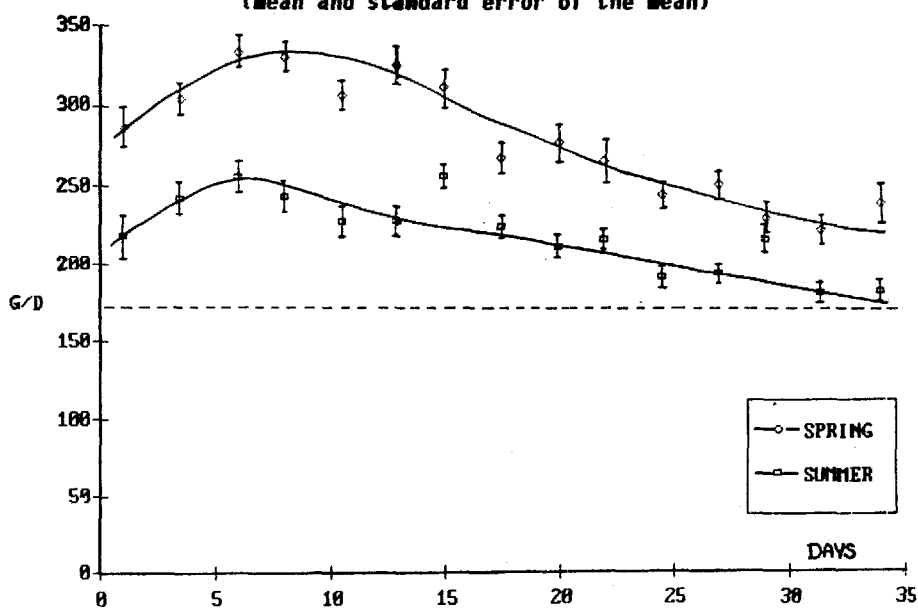
TABLE 1
Temperatures observed during the ad libitum feeding period
(mean \pm standard deviation)

Temperatures ($^{\circ}$ C)	Spring	Summer
Daily mean temperature	13.8 \pm 3.0	20.7 \pm 2.0
Mean daily mini	10.4 \pm 2.6	15.4 \pm 1.8
Mean daily maxi	17.2 \pm 3.8	26.1 \pm 2.6
Extreme minimum	4	12
Extreme maximum	26	31
Mean daily variation	6.8 \pm 2.6	10.6 \pm 2.0

During the whole study, 6 females out of 37 died in the experimental group and 4 out of 31 in the control (non significant). No mortality was attributed to trichobezoards.

During the ad libitum period, the mean food daily intake was significantly ($P < 0.001$) higher in spring than in summer : 276.5 \pm 6.2 vs 216.3 \pm 5.4 g/day. This situation was observed from the first days following plucking until the end of the ad libitum period (fig. 1).

FIGURE 1
Evolution of the daily feed intake of angora rabbits,
fed ad libitum in spring and summer, from plucking
to the end of the 5th week after plucking
(mean and standard error of the mean)



The mean consumption was equal in spring to 161 % of the "normal" limited ration (1200 g/week) with the maximum at the end of the first week after plucking : 194 %. The corresponding data for summer are 126 % and 148 %. The difference between spring and summer food intake is to be related to ambient temperature higher in summer and then to a lower energy requirement for heat production.

At the end of the spring ad libitum feeding period, live weight of rabbits was significantly higher in the ad libitum group than in the restricted control (table 2). In summer, this difference was only a tendency. Associated with partial (5 weeks) ad libitum feeding, no increase of the wool production was observed 9 weeks later ; moreover a slight, but non significant, decrease was observed in summer (table 2). In a mathematical study of the individual wool production, we have not been able to obtain any consistent simple or multiple regression including food intakes during the ad libitum feeding period and/or live weight of the rabbit angora females, in order to explain the wool production.

TABLE 2
Live weight and wool production of angora rabbits during the 2 seasons
(means in grammes \pm standard error of the mean)

	Ad libitum for 5 weeks	Food restriction	Difference: Statistical significance (P)
<u>Spring</u>			
. Live weight 5 weeks after plucking	4457 \pm 106	4244 \pm 47	0.014
. Wool production	258.3 \pm 8.7	259.8 \pm 6.6	0.472
<u>Summer</u>			
. Live weight 5 weeks after plucking	4234 \pm 73	4127 \pm 44	0.080
. Wool production	235.9 \pm 6.4	246.5 \pm 8.7	0.141

CONCLUSION

The absence of any increase of wool production after ad libitum feeding is not in agreement with previous results (ROUGEOT and THEBAULT, 1977 ; SCHLOLAUT and LANGE, 1983). But in these experiments, the ad libitum feeding was performed for the whole plucking interval and not only for the 5 first weeks. Then, the experimental period was probably too short despite the high energy requirement (VERMOREL et al., 1988). In this direction, in a new experiment of 5 weeks ad libitum feeding, in winter, with lower temperatures, a slight wool production increase may be observed, but the food expense may be, in this case, greater than the wool value.

BIBLIOGRAPHY

- CHARLET-LERY G., FISZLEWICZ M., MOREL M.T., ROUGEOT J., THEBAULT R.G., 1985. Variation annuelle de l'état nutritionnel de la lapine Angora durant les pousses saisonnières des poils. Ann. Zootech., 34, 447-462.

- ROUGEOT J., THEBAULT R.G., 1977. Formation des trichobézoards chez le lapin Angora nourri ad libitum avec un aliment aggloméré. Rec. Méd. Vét., 153, 655-659.
- ROUGEOT J., THEBAULT R.G., 1984. Le lapin Angora, sa toison, son élevage. Le Point Vétérinaire, éd. Maisons Alfort, France, 182 pp.
- SCHLOLAUT W., LANGE K., 1983. Untersuchungen über die Beeinflussung quantitativer Merkmale der Wolleleistung beim Angorakaninchen durch Geschlecht, Alter, Fütterungstechnik und Methioningehalt des Futters. Züchtungskunde, 55, 69-84.
- VERMOREL M., VERNET J., THEBAULT R.G., 1988. Thermoregulation du lapin Angora après l'épilation. Cuniculture, 15, (in press).

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31 angora rabbit females were fed ad libitum during 5 weeks after plucking for 2 plucking intervals -spring and summer- and then fed the same pelleted diet on a restricted level as the 31 controls, for 9 weeks.

In spring, food consumption during ad libitum feeding represents 161 % of the control (1200 g/week), 126 % in summer. This higher food intake was associated with a higher live weight : on average 4345 g for the experimental group and 4186 g for the control. But the wool production was the same 247 g/plucking vs 253 g for the control. The conclusion of the authors was that the ad libitum feeding period was too short despite the high energy requirement described during the first weeks following plucking.

**INFLUENCE D'UNE ALIMENTATION AD LIBITUM DURANT LES 5 SEMAINES
SUIVANT L'ÉPILAGE SUR LA PRODUCTION DE POIL
CHEZ LE LAPIN ANGORA**

Lebas F., Thebault R.G.

31 lapines angora de type français ont été alimentées à volonté durant les 5 semaines suivant deux épilages consécutifs. Ensuite, elles ont reçu le même aliment granulé en quantité limitée durant 9 semaines, de même que les 31 lapines angora témoin.

Au printemps, la consommation ad libitum a représenté 164 % de celle des témoins rationnés à 1200 g/semaine et 126 % en été. Cette élévation de consommation s'est traduite par une augmentation significative du poids vif : 4345 g contre 4186 g pour les témoins. Par contre, il n'a été enregistré aucune variation significative de la production de poil : 247 g/épilation contre 253 pour le témoin rationné. La conclusion des auteurs est que la période de consommation ad libitum a été trop courte pour entraîner des conséquences durables malgré le besoin élevé en énergie déjà décrit pour les premières semaines qui suivent l'épilage.

