

**HOLSTEIN-FRIESIAN CATTLE IN ALBANIA:  
1. EFFECT OF THE PREGNANCY PERIOD IN ALBANIA ON  
THE LIVE WEIGHT OF FIRST CALVING COWS AND THE  
BIRTH-WEIGHT OF CALVES**

**K. Kume, Y. Bicoku**

**Summary**

Since some pregnant Holstein Friesian heifers were imported from Germany, a study has been conducted to show the effect of the period of pregnancy, occurring under Albanian conditions, on the cows live weight and calves birth weight.

Two herds were analyzed: the Xhafzotaj herd with proper feeding and management and the Valias herd with poor feeding and management. The management and feeding of the animals were different and the reaction of the cows to those factors was different, too.

In the Xhafzotaj herd, the effects of the period of pregnancy in Albania on the live weight of the cows and birth weight of calves was not significant. The average values of these factors were:  $520.3 \pm 3.6$  and  $35.4 \pm 0.4$ , respectively.

In the Valias herd the effects of the period of pregnancy in Albania on the live weight of the cows and birth weight of calves was significant. The length of pregnancy period in Albania is accompanied by decrease of the calves birth-weight. The same decrease is seen in the live weight of the cows five days after their calving. The average values of these factors were  $488.1 \pm 3.1$  and  $30.0 \pm 0.3$ .

It may be concluded that when Holstein-friesian cows are put under unfavorable conditions concerning feeding and management, there is a tendency to transmit the stress to the foetus.

Key words: pregnancy length, live weight, calving, birth-weight

*Introduction*

In December 1989, 600 pregnant Holstein Friesian heifers were imported to Albania from Germany. They were settled in two centers: Valias near Tirana and Breeding Station of Xhafzotaj near Durres. This breed is very well known for high yield milk production.

Since the animals were put in a quite different environment in comparison with the country of origin, a study about the behavior and adaptation of the animals to new conditions was to be carried out. When animals entered Albania they were in different months of pregnancy. We studied the effect of the length of the period of pregnancy

---

**K. Kume, Zootechnical Research Institute Tirana; Y. Bicoku, Director Animal Production Division, Ministry of Agriculture and Food, Tirana, Republic of Albania**

in Albania (the period from the moment they entered Albania to the day of freshening) on the live weight of the cows at calving and birth-weight of calves.

#### *Materials and methods*

The research was carried out on 600 Holstein Friesian heifers in Valias and Xhafzotaj. In the Xhafzotaj herd the good and proper feeding (15 kg U.F., 15.2 kg dry matter, 110 proteins/U.F. in a day per cow) was applied, while the Valias pregnant heifers were fed with rations containing 12 kg U.F., 12.4 kg dry matter, 106 gr/U.F.

The length of the period of pregnancy in Albania was calculated for each animal. According to this the data were set in classes where the interval of each class was 15 days. The live weight 5 days after calving, age at calving in months, sex and birth-weight of calves were recorded for each cow.

In order to evaluate the effect of the length of the period of pregnancy in Albania on the live weight of cows and birth-weight of calves, linear models with fixed effects (Harvey 1975) were used:

Model 1: Live weight of the cow at the first calving

$$Y_{ijk} = \mu + A_i + B_j + e_{ijk}$$

$Y_{ijk}$  - live weight of the cow 5 day after the date of calving.

$\mu$  - mean

$A_i$  - effect of the age at first calving in months

$B_j$  - effect of the length of the period of pregnancy in Albania  
(for Valias  $j = 1, 12$ ; Xhafzotaj  $j = 1..13$ )

$e_{ijk}$  - error

Model 2: Birth-weight of calves

$$Y_{ijkl} = \mu + A_i + B_j + S_k + b \cdot X_{ijkl} + e_{ijkl}$$

$Y_{ijkl}$  - birth-weight of calves

$\mu$  - mean

$A_i$  - effect of the age at first calving in months

$B_j$  - effect of the length of the period of pregnancy in Albania  
(for-Valias  $j = 1..12$ , Xhafzotaj  $j = 1..13$ )

$S_k$  - effect of sex of the calf

$b$  - regression coefficient of birth-weight of calves on the live weight of mother ( $H_{ijkl}$ )

$e_{ijkl}$  - error

*Results and discussion*

The results of statistical analysis according to models 1 and 2 are given on tables 1 and 2.

Table 1. - ANALYSIS OF VARIANCE FOR THE LIVE WEIGHT OF COWS (MODEL 1)

Source of variation	Valias herd		Xhafzotaj herd	
	d.f.	F	d.f.	F
Age of calving	10	4.49**	8	4.72**
Length of pregnancy	11	3.56**	12	1.70
Error	216	Variance 1306.9	205	Variance 1720.3

\*\* p < .01

Table 2. ANALYSIS OF (CO) VARIANCE FOR THE BIRTH-WEIGHT OF CALVES (MODEL 2)

Source of variation	Valias herd		Xhafzotaj herd	
	d.f.	F	d.f.	F
Cow weight	1	1.08	1	4.09**
Age of calving	10	1.13	8	1.62
Length of pregnancy	11	6.98**	12	1.72
Sex	1	8.46**	1	20.10**
Error	215	Variance 11.186	202	Variance 15.501

\*\*p < .01

The average live weight of the cows (five days after calving) the Xhafzotaj herd was  $520.25 \pm 3.79$  kg, while in the Valias herd it was  $488.1 \pm 3.09$  kg. The birth weight of calves was  $35.968 \pm 0.41$  kg, and  $30.990 \pm 0.31$  kg respectively.

They vary according to the herd. The increase-gradient of the live weight of new born calves with the increase of cows live weight in the Valias herd is lower than in the Xhafzotaj herd. The difference is about 48% within the limit of cows live weight in the Valias, a difference of only 7% in the calves at birth live weight corresponding in the Xhafzotaj herd the difference of 32% for the cows corresponds the a difference of 13% for the live weight of the calves.

In both herds biological law according to which the heavier cows give heavier calves (Halley and Softe, 1987) is validated.

Despite different conditions in Valias and Xhafzotaj herds the known relation between age and live-weight at first calving (Vincani and Celio, 1987) is not violated.

The variability of cows' live-weight five days after calving in the Valias herd was influenced by both factors taken in te account ( $p < 0.01$ ). In the Xhafzotaj herd this variability is influenced only by cow's age at first calving ( $p < 0.01$ ).

The birth-weight of calves in Xhafzotaj was statistically influenced only by sex. In the Valias herd it was influenced not only by sex ( $p < 0.01$ ) but by the length of the



pregnancy period in Albania ( $p < 0.01$ ), too.

Using least square means (LSM) of live-weight of cows and birth-weight of calves, which both correspond to the factor "length of pregnancy" estimated by the models 1 and 2, we present fig 1 and 2 to show those relations. It can be observed that the relation in both herds differs significantly. In the Xhafzotaj herd, the live weight of the cows five days after their calving is increased according to the length of pregnancy period in Albania. So, pregnant heifers that calved about two months after their coming to Albania (16.5% of the heads) have an average live-weight of 507.6 kg while the animals that calved after 3 to 7 months from the day they entered Albania have a live-weight of 530.1 kg in average. The calves of the cows from the first group have an average live-weight 34.6 to 37.3 kg and those from the second group 34.7 to 34.8 kg. In this herd the good and proper feeding during the period of pregnancy in Albania affected only the increase of live-weight of the cows. This feeding did not show significant differences in calves birth-weight.

The situation in the Valias herd is different. The longer the pregnancy duration in Albania, the lower is the live-weight of the cows at calving and birth-weight of calves. The heifers that calved about two months after they entered Albania (about 14.6% of the heads) had an average live-weight of 511.1 kg, while the animals that calved after 3-7 months were of 488.0 kg. Live-weight of the calves of cows of the first group varied from 33.07 kg to 36.59 kg, while that of the second group was 27.12 kg to 31.81 kg.

These results were the result of low level of feeding and management of animals in Valias.

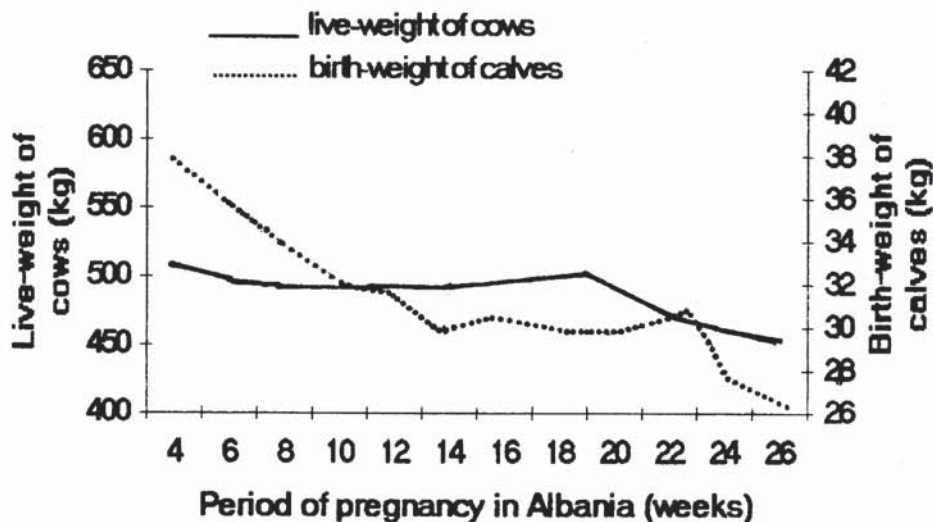


Fig. 1. - LIVE-WEIGHT OF COWS AT CALVING AND BIRTH-WEIGHT OF CALVES - VALIAS HERD

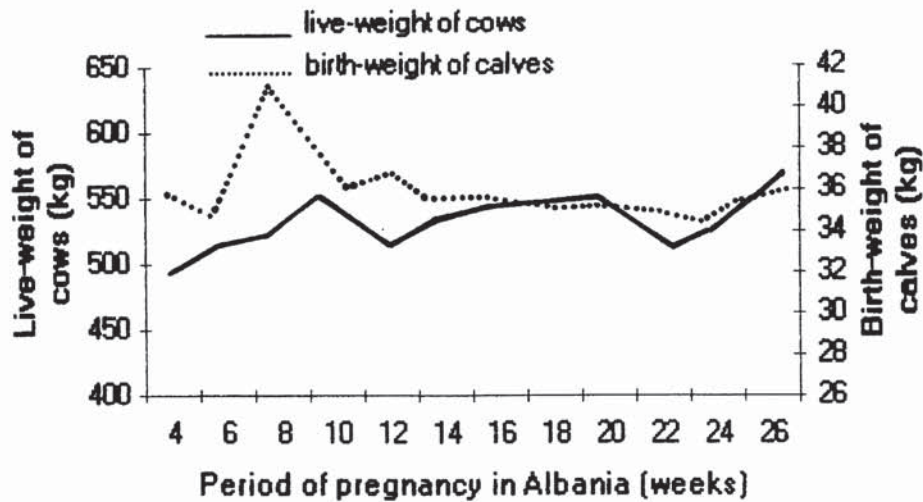


Fig. 2. - LIVE-WEIGHT OF COWS AT CALVING AND BIRTH-WEIGHT OF CALVES-XHAFZOTAJ HERD

Taking into consideration the differences between the two herds concerning feeding and management level (Tartari et al, 1971), and knowing the average values of Holsteins for cows live-weight at calving and birth-weight of calves (520-530 kg and 40-41 kg, respectively, Roest, 1990), a conclusion could be made that the imported animals are not raised and managed in Albania according to the requirements of the breed. As the deviations from the breed level for these two traits are Xhafzotaj about 1%; 12.2% and Valias about 7%; 24.4%, respectively we may conclude that the stress due to this level of management is more remarkable in the development of the foetus, than in the pregnant heifer herself.

#### LITERATURA

1. Halley R. J., R. J. Softe. (1987.): The Agricultural Notebook, 18 Edition. Butterworths. Page 348-385
2. Harvey, W. R. (1975.): Least squares analysis of data with unequal subclass numbers. USDA, ARS H-4, Beltsville, MD
3. Tartari T., D. Caushi, L1. Gjika. (1971.): Seleksionimi gjenetik i kafsheve bujqesore.
4. Vincani G., T. Celu, (1987.): Permiresimi gjenetik i kafsheve bujqesore.
5. Aliko H. (1974.): Fiziologia e kafsheve shepiake.
6. Roest J. (1991.): Young stock care, the future. "Veeopro" Holland. Vol 6. Page 22-23.

**HOLSTEIN - FRIESIAN GOVEDO U ALBANIJI:  
1. UTJECAJ ZAVRŠNOG DIJELA GRAVITETA KRAVA UVEZENIH U ALBANIJU NA MASU  
KOD TELENJA I PORODNU MASU TELADI**

**Sažetak**

Istraživan je utjecaj zadnjeg dijela graviteta u Albaniji na Holstein-friesian visoko bređih junica, uvezenih iz Njemačke, na masu kod telenja i porodnu masu teladi. Promatrana su dva stada: Xhafzotaj stado sa valjanom hranidbom i držanjem i Valias stado sa lošom hranidbom i držanjem. U Xhafzotaj stadu utjecaj bređosti u Albaniji na masu krava i teladi nije bio signifikantan. Prosječne vrijednosti su bile  $520.3 \pm 3.6$  kg za masu krava i  $35.4 \pm 0.4$  kg za porodnu masu teladi. Nasuprot tome u Valias stadu utvrđen je signifikantan utjecaj duljine graviteta u Albaniji na mase krava i teladi. Što su krave duže razdoblje graviteta provele u Albaniji manja je bila masa krava pri porodu i porodna masa teladi. Prosječne vrijednosti su iznosile  $488.1 \pm 3.1$  kg i  $30.0 \pm 0.3$  kg.

Može se zaključiti da držanje visokobređih junica u nepovoljnim uvjetima ima negativan utjecaj ne samo na masu krava nego i na porodnu masu teladi.

Primljeno: 23. 9. 1993.