

HAIR GROWTH IN F.H. AND M.R.Y. CALVES.

By

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SUMMARY

All calves were born between March and May 1962. At birth weight of hair per unit area reached the peak. Hair diameter increased slightly after birth. Hair length was higher at birth than after birth. The percentage of medullated fibres reached the maximum at birth and during the first months tested. The old hair clubs are shed after birth and replaced by new ones of a different type. It seems that this process goes on gradually throughout the months tested. After birth the coat of the calves passes through the annual cycle.

The correlation between weight of the calves at 3 months of age with : weight of hair, hair diameter and hair length at birth were found not to be significant.

INTRODUCTION

During recent years many workers studied various aspects of the physiology of climatic adaptation among domestic livestock. Dowling (1956), referred to many investigations that they emphasize the importance of the skin as an organ of adjustment between the animal and the varying physical conditions of its environment. There is lack of knowledge about the birth coat of calves and hair growth after birth. Taking this into consideration, the morphological characteristics of hair fibres at birth and in some months after birth in Black-and-White Friesian (F.H.) and Red-and-White breed (M.R.Y.), this present study was carried out.

MATERIAL AND METHOD

The hair growth was studied on the following calves :

1. 12 Friesian (F.H.) calves ($\text{♀}6 + \text{♂}6$).
2. 8 Red and White (M.R.Y.) calves ($\text{♀}5 + \text{♂}3$).

These calves were reserved at the "Laboratorium voor Veeteelt". Samples were taken at intervals of one month, beginning in June 1962 till December. Samples were clipped in the middle of each month, as indicated in table 1. The hair was cut from the places shown in plate 1. During the experiment 3 M.R.Y. calves (bulls) were sold.

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TABLE 1.—Number and breed of animals tested monthly.

F.H. calves No.	M.R.Y. calves No.	Date of cutting the hair	Place on plate 1.
12	8	15 June.	1
12	8	18 July.	2
12	8	15 August.	3
12	8	12 September.	4
12	8	15 October.	5
12	8	15 November.	6
12	5	15 December.	7

These calves were born during March, April and May 1962. Samples were taken from a unit area of skin. A 14 × 14 cm piece of leather was placed on the skin and its borders were marked with a hair clipper. These after the marked area was clipped with an electric clipper. The procedure and the treatment was done according to Kassab (1964).

The correlation between weight of the calves at 3 months of age and hair characters at birth was estimated

It is of interest to mention here that the samples were taken from live and healthy animals, when they were at ease and standing normally.

RESULTS AND DISCUSSION

Weight of hair :

The results given in table (2) summarize a description of the weight of hair at birth and at different months of the year for the two breeds (F.H. and M.R.Y.). It can be noticed that, at birth, the hair weight is at maximum and thereafter it decreased till August and then gradually increased till December.

Hair diameter.

From table (2) it can be observed that the diameter increased slightly after birth till June and then remained nearly constant till August, after which it gradually decreased. The minimum hair diameter was in December.

TABLE 2.—Average weights of hair on 14×14 cm and hair diameter within months and breed.

Month	Weight of hair			Hair diameter		
	F.H. (gr.)	M.R.Y. (gr.)	Total	F.H. μ	M.R.Y. μ	Total
Birth*	6.07	5.33	5.70	49.62	49.96	49.79
June	4.01	3.70	3.85	51.51	51.91	51.71
July	2.04	2.26	2.15	50.42	51.16	50.79
August	1.51	1.96	1.73	51.75	51.73	51.74
September	1.97	2.13	2.05	48.50	48.24	48.37
October	2.47	3.04	2.75	45.16	45.70	45.43
November	2.83	3.71	3.27	41.57	42.01	41.79
December	3.42	4.57	3.99	38.28	39.93	39.10
Total	2.60	3.52	3.06	46.74	47.24	46.99

(*) March, April, May.

Hair length :

The results given in table (3) show the average hair length for each breed at birth and at several months of the year. Hair length at birth is higher than after birth. Variations in hair length as presented in table (4) show that hair length gradually decreased after birth till July, thereafter July it increases until the maximum is reached in December.

TABLE 3.—Average of hair length and presence of medulla (%).

Month	Hair length (cm)			Presence of medulla (%)		
	F.H.	M.R.Y.	Total	F.H.	M.R.Y.	Total
Birth (*)	24.75	25.93	25.34	99	100	99.5
June	20.44	22.71	21.57	100	100	100
July	18.52	22.35	20.43	100	100	100
August	19.09	23.29	21.19	88.3	100	94.2
September	19.95	25.97	22.96	83.8	97.5	90.7
October	28.08	35.95	32.01	68.2	91.0	79.6
November	39.43	47.62	43.52	57.5	77.2	67.3
December	40.24	57.78	49.01	56.2	64.0	60.1
Total	26.53	33.66	30.09	79.1	89.9	84.5

(*) March, April, May.

Medullation :

Variations in presence of medulla are given in table (3). The percentage of medullated fibres in this group is of spring born calves reaching maximum at birth and during the first months of postnatal life.

Correlation Coefficients :

Correlation coefficients between weight of the calves at (3) months of age and hair characters at birth was given in table (4.) These correlations were found not to be significant.

From the results obtained in this work, it can be observed that the old hair clubs are being shed after birth and replaced by new ones of a different type.

After birth it is clearly found that hair fibres begin to fall out gradually. The coat of the calves then passes through the annual cycle *i.e.* the shedding of birth coat is done after birth, nearly in the first autumn. This shedding can be ascribed to the difference due to the absence of shedding during prenatal life. An adequate proof to such a suggestion is provided by our findings that weight of hair per surface area attains its maximum in the birth coat and also that hair length is longer at birth than after birth. That hair length and hair diameter at birth are not maximal, may be attributed to a form of prenatal check.

TABLE 4.—Correlation between weight of the calves at 3 months of age and hair characters at birth.

Characters correlated	F.H.		M.R.Y.	
	No.	Correlation	No.	Correlation
<i>Weight of the calf at 3 months age with :</i>				
Weight of hair at birth	21	0.31	18	0.003
Hair diameter at birth.	21	0.01	18	-0.23
Hair length at birth	21	0.12	18	0.16

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نمو الشعر في الفريزيان وماشية الموزيل والآيل الحمراء

الملخص

تبين من نتائج هذا البحث أن وزن الشعر بلغ أقصى درجة عند الولادة بينما زاد قطر الشعر زيادة طفيفة بعد الولادة .

هذا كما ظهر أيضا أن طول الشعر بلغ أقصاه أيضا عند الولادة ويتناقص بعد ذلك هذا وقد بدأ تغيير الشعر بعد الولادة وتم تغيير الشعر بصفات مخالفة لما كانت عليه عند الولادة .

هذا كما تبين أيضا أن الفطاء الشعرى عند الولادة يبدأ في تغييرات دورية كلما تقدم العمر بالحيوان . كما تبين أن هناك تلازما معنويا بين وزن الصجول في عمر ثلاثة شهور ووزن الشعر وقطر الشعر وطول الشعر عند الولادة .