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EFFECT OF AGE ON PRIMING AND FUR QUALITY OF THE RABBIT CASTOR REX

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INTRODUCTION

In order to produce good-quality rabbit furs a special breed for pelt production is needed. The meat production rabbits of today are slaughtered at an approximate age of three months and throughout the year, and furs from these rabbits are of poor quality.

Such a breed is Rex which originated from a mutation first observed in 1919 in France (Cheeke, 1987). The guard hairs and the undercoat of the Rex rabbit pelt are of uniform length.

The Rex has been bred in a number of colours, but the Castor Rex has a dark rich chestnut-brown colour.

Production of superior fur demands a high quality of the raw material, i.e. the pelts. Many factors influence fur quality, but two main factors seem to be the most important: the age of the rabbits and the time of the year when they are pelted. In Denmark the coat is expected to be stable in November and in the winter months December and January. Before and after these months, the rabbits are moulting and in the summer, the pelts are of inferior quality. However, it is more uncertain how old the animals should be at pelting time. An investigation (Petersen & Rasmussen, 1991) in which Castor Rex rabbits were pelted in the beginning of December and at an age of five and six months showed that none of the five-month-old and only 40% of the six-month-old rabbits were in prime condition.

This investigation was therefore performed with the aim to study the effect of age on priming and fur quality of the Castor Rex rabbits.

MATERIAL AND METHODS

A total of 111 three-month-old Castor Rex from the Institute's own strains were distributed to the "pelting age groups" 6 months, 7 months and 8 months, respectively, with the final numbers of 32, 39 and 35 animals in the groups at the end of the investigation. The rabbits in the 7 and 8-month-groups were born in April 1990 and pelted in November and December, while the rabbits in the 6-month-groups were born in June and pelted in December.

The rabbits were caged individually in a two tier all wire cage system. The dimensions of the cages were 45 cm long x 45 cm high x 90 cm deep for a total of 4050 cm^2 of floor space. The wire of the floor was plastic coated and the wire mesh floor spacing was 12.6 mm x 25.3 mm.

The rearing house as well as the experimental house were equipped with windows and during both periods the rabbits were kept under daylight conditions. The length of the day was

decreasing from Midsummer Day, when the day length was 17 hours and 26 minutes, until mid November when the daylight was supplemented with artificial light making a constant day length of 8 hours per day.

Vrillon et al. (1988) found a better fur quality and that the moulting begins one week earlier among Castor Rex rabbits when the light period was decreased from 16 to 8 hours per day compared to a 16 hours light period per 24 hours.

Johnston and Taylor (1984) reported that restricting feed to 75% of ad libitum resulted in a smaller body size but in similar pelt size and in a greater degree of prime.

Examination of fur quality and priming of Castor Rex in relation to age and feeding intensity (Petersen & Rasmussen, 1991) confirmed that the feed - without any detrimental effect on these parameters - could be restricted to 75% of ad libitum intake.

This feeding regime was therefore used and besides the diets shown in table 1, water and straw was provided ad libitum. The pellets size was 5 mm.

Table 1 Composition of the diet

Ingredient	% of diet
Barley	15.00
Oats	30.00
Grass meal	30.00
Wheat bran	9.60
Soya bean meal	4.00
Sunflowerseed meal	8.00
Molasses	1.50
Mineral/vitamin premix	1.50
Methionine, 40% mix	0.40

A subjective pelt grading of live animals concerning hair length, hair quality, colour, and quality of guard hair was conducted. The dried pelts were subjectively graded for quality and colour. The grading scale appears from table 2.

Table 2 Grading scales

	Points	Graduation		
Live animals				
Hair length	1 - 5	1 = shortest hair		5 = longest hair
Hair density	1 - 5	1 = poor density		5 = best density
Quality of guard hair	1 - 5	1 = poor quality		5 = best quality
Colour	1 - 3	1 = dark	2 = medium	3 = fair
Dried pelts				
Quality	1 - 10	1 = poor quality		10 = best quality
Colour	1 - 6	6 = darkest		

The rabbits were weighed individually, killed by CO_2, pelted, and after the pelts were taken from the animals, the pelts were cleaned for residual fat and muscles. The leather sides of the pelts were then subjectively graded for non-prime areas which are easily recognized as dark areas. When the pelt is in prime condition the leather side has a greyish-white appearance (Taylor and Johnston, 1984). The grading points were: 1 for non-prime and 100 for prime condition. The fresh pelts were weighed and the length of both fresh and dried pelts were measured from tip of nose to tail root.

The pelts were placed on a special stretcher made of wood in order to obtain a pelt of defined shape. The pelts were then moved to a room with a temperature of 17-18°C and a relative humidity of 58-61% and dried for three days.

Data were analyzed by analysis of variance, and power function for age is tested by t-test of the Least Square Means.

RESULTS AND DISCUSSION

The average body weight at pelting as well as the average weight and length of pelt at pelting are shown in table 3.

Table 3 Results from pelting, body weight, weight and length of fresh pelt

Group age, months	Body weight g	Weight of pelt g	Length of pelt cm
6	2947[b]	346[b]	56.8[c]
7	3305[a]	414[a]	61.0[a]
8	3292[a]	426[a]	59.8[b]

Means with different superscripts at body weight and weight of pelt are significantly different ($P<0.0001$) and at length of pelt ($P<0.001$).

The means presented in table 3 show that the rabbits from the 7 and the 8-month-groups, as expected were significantly heavier than those from the 6-month-group and the results also show that there were no differences in body weight between the two former groups. This seems to indicate that the rabbits are not matured until they reach an age of seven months. The restricted feeding obviously prevented deposition of fat as the eight-month-old animals were not heavier than those from the seven-month-group which one should have expected.

Pelt length was significantly influenced by weight as the heaviest rabbits had the longest pelts. Despite similar body weight a significant difference in pelt length between 7 and 8-month-old rabbits was also observed.

Priming

In table 4 the prime condition of the pelts is shown.

Table 4 Priming of different parts of the pelt

Group	Priming of different parts of the pelt		
age, months	Back	Hip	Underside
6	44[b]	34[b]	93[a]
7	91[a]	94[a]	75[b]
8	80[a]	92[a]	90[a]

Means with different superscripts are significantly different (P<0.0001).

Table 4 illustrates that the only part of the pelt from the 6-month-old rabbits which was in prime condition was the underside. Compared to animals from the 7-month-old group they had a significantly higher degree of prime and a degree similar to that of the eight-month-group. The reason for the better prime condition of the underside of the pelt from the youngest rabbits may be related to the intermediate pelt, which they seemed not to have changed to the senior pelt, when they were pelted. This finding coincides with that of Petersen & Rasmussen (1991) who found that five-month-old Castor Rex rabbits had a significantly larger prime area on the underside compared to that of six-month-old animals.

The best priming of the three parts of the pelts occurred among the seven to eight-month-old animals and the only significant difference between these groups was the prime condition of the underside, where the pelts from the eight-month-old animals were in a better prime condition.

As the most valuable fur is situated on the back and the hip there is no reason - if it is only a question of priming - to let the rabbits be older than seven months before pelting. But pelt and fur quality is important if you want to produce quality skin and therefore these parameters were also examined, and in table 5 the results from the pelt grading of live animals are shown.

From these figures it appears that the rabbits from the eight-month-group had the significantly best pelt quality of all three groups regarding hair length and quality of guard hairs and also the best hair density compared to the six-month-group. The darkest skin is assumed to be the most preferable in manufacturing of fur garments. As it can be seen, the rabbits in the seven-month-group had the significantly darkest pelt followed by the eight-month-group and the six-month-group with the fairest pelt.

Table 5 Pelt quality, live animals

Group age, months	Hair length	Hair density	Colour	Quality of guard hairs
6	2.6^{b}	$2,9^{b}$	2.7^{c}	3.0^{b}
7	2.6^{b}	3.3^{ab}	1.8^{a}	3.0^{b}
8	3.3^{a}	3.7^{a}	2.3^{b}	3.6^{a}

Means with different superscripts are significantly different (P<0.01).

The results from fur grading (table 6) showed the same tendency as the pelt grading of live animals. The points were significantly increased from six to seven and eight-month-old animals, and differences between the two latter groups were not significant.

Table 6 Fur quality, dried pelts

Group age, months	Fur quality		
	Quality	Colour	Pelt length, cm
6	3.1^{b}	2.3^{b}	67.6^{b}
7	5.6^{a}	4.2^{a}	69.8^{a}
8	6.2^{a}	4.2^{a}	70.6^{a}

Means with different superscripts at quality and colour are significantly different (P<0.0001) and at pelt length (P<0.05).

Correlations between body weight at pelting and weight and length of fresh pelts as well as weight of dried pelts are shown in table 7. Significantly positive correlations were found between most traits except between weight of fresh pelts and length of dried pelts, and the explanation for that may be due to the stretching of the pelts, when the pelts were tanned.

Table 7 Correlations between different weight and length measures

	Weight of fresh pelts	Length of fresh pelts	Length of dried pelts
Body weight at pelting	0.57***	0.70***	0.55***
Weight of fresh pelts		0.44***	0.04 ns
Length of fresh pelts			0.48***

ns = no significance *** = P<0.001

In practice it seems possible to use the subjective grading of hair density and quality of guard hairs of live animals as criteria in selection of breeding animals as significantly positive correlations were found between those traits and fur quality (table 8).

Table 8 Correlations between pelt quality of live animals and fur quality

	Pelt quality, live animals		
	Hair length	Hair density	Quality of guard hairs
Fur quality	0.11 ns	0.24*	0.50***

ns = no significance P = < 0.05 *** = P<0.001

Correlations between priming of the back and the pelt quality traits: hair length, hair density, colour and quality of guard hairs were also examined but the correlations between these traits were less pronounced than between those seen in tables 7 and 8. Only in the six-month-group a significant ($P<0.05$) correlation ($r=0.44$) between priming and hair length was found. A tendency to a positive correlation between priming of the back and quality of guard hairs was observed at the eight-month-group ($r=0.29$, $P<0.09$).

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CONCLUSION

The priming of different parts of the pelt as well as the pelt quality traits: hair length, hair density, quality of guard hairs and colour, and the fur traits: quality, colour and pelt length showed significant differences in favour of the pelting age groups 7 and 8 months compared to the 6-month-group and, therefore, it is concluded that Castor Rex rabbits should be older than six months at pelting and probably rather eight than seven months.

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SUMMARY

An investigation concerning effect of age on priming and pelt and fur quality of the rabbit Castor Rex was conducted.

The rabbits were pelted at an age of 6, 7 and 8 months and fed a normal pellet diet for rabbits which was restricted to an amount of 75% of ad libitum intake.

At pelting time the pelts of live animals were subjectively graded for hair length, hair density, colour and quality of guard hairs and when the pelts were taken from the animals the leather sides were subjectively graded for none prime areas. The dried pelts were graded for quality and colour and the length of fresh as well as dried pelt was measured.

Compared with the rabbits in the 6-month-group the priming of the back and hip was significantly higher ($P<0.0001$) in the 7 and 8-month-groups while the priming of the underside was best in the 6 and 8-month-groups. The pelt quality regarding hair length and quality of guard hairs was significantly best ($P<0.01$) in the 8-month-group while the 7-month-group had the darkest pelts ($P<0.01$).

The fur quality was significantly highest ($P<0.0001$) among the two oldest groups and only minor differences were observed between these groups. Correlations between body weight at pelting, weight and length of fresh pelts and length of dried pelts as well as those between fur quality and the pelt traits hair density and quality of guard hairs were significant and positive, while those between priming of the back and pelt quality was low.

It is concluded that Castor Rex should be older than six months at pelting and probably rather eight than seven months.