

PRODUCTION OF BLACK-AND-WHITE CATTLE OF THE SIBERIAN TYPE

A.I. Zheltikov, V.L. Petukhov, B.L. Panov, A. Ph. Kondratov

Institute of Veterinary Genetics and Selection of Novosibirsk Agrarian University,
160 Dobrolubov Str., 630039 Novosibirsk, Russia

SUMMARY

During the production of the Siberian type of Black-and-White cattle groups of animals different in Holstein thorough-breediness were obtained. The animals with over 75% breediness yielded 5244-6424 kg of milk, the content of butterfat and protein being 4.0 - 4.15% and 3.23 - 3.3%, respectively. The indexes were higher than those in other groups of cows. The increased Holstein breediness was observed to bring about significant variations in the frequency of individual erythrocyte antigens.

Keywords: Cattle, erythrocytic antigens, blood groups, resistance, monitoring.

INTRODUCTION

Black-and-White breed occupies one of the leading places among milk cattle breeds (*Bos Taurus*). It constitutes 55.9% in West Siberian regions of Russia. Black-and-White breed has large genetic potential for milk production, it exceeds many breeds in economic characters and acclimatizes itself very well (Stoloman 1980; Welera 1979).

However, aboriginal Black-and-White cattle are observed to have some animals defective in their external appearance, low productive and unfit the industrial technology. That is why continuous work aimed at the improvement of the breed is needed. The program has been developed to breed 12 regional intrabreed types of Black-and-White cattle with Holstein breed involved (Ufimtseva *et al.* 1996). One of these types is believed to be Siberian.

MATERIALS AND METHODS

The investigation of the population of Black-and-White cattle and their inbreeding with Holstein breed was carried out on leading cattle breeding farms in West Siberia. Herds yielding from 5500 to 6500 kg of milk per year were set up on these farms. The immunologic test of the true genesis of the animals was done. Blood groups of 9 genetic systems were determined through 48 antisera in over 20,000 animals.

RESULTS AND DISCUSSIONS

Following the plan to produce new Siberian Black-and-White cattle Holstein bulls were used in crossings to dam breeding-stock of different ecogenesis. So far a large group of animals different in Holstein breediness were obtained (Table). The increase in the breediness results in milk yield and butterfat going up. Purebred Black- and-White animals and crosses with the 50% breediness produced the lowest milk yields. Half-breeds exceeded Black-and-White cows in milk yield of the first lactation and the animals with the 50% breediness in that of the second and best lactations by 353 kg ($P < 0.05 - 0.01$) and by 258 - 292 kg ($P < 0.05 - 0.01$), respectively. Over 50% increase in Holstein breediness results in more considerable going up of milk yields. Crosses with over 75% level of

Table 1. Milk productivity of cows different in breediness

Breediness for Holstein breed, %	Lactation	Yield	Cv	Butterfat	Cv	Protein	Cv
		(kg) $\bar{x} \pm S\bar{x}$		(%) $\bar{x} \pm S\bar{x}$		(%) $\bar{x} \pm S\bar{x}$	
0	1	4612±42	19.7	3.82±0.01	4.2	3.16±0.01	4.6
	Best	5886±72	19.3	3.91±0.01	3.9	3.23±0.01	4.4
Under 50	1	4880±52	19.1	3.94±0.01	4.3	3.28±0.01	4.8
	Best	5680±96	19.0	3.96±0.02	4.8	3.25±0.01	4.8
50	1	4965±38	18.5	3.94±0.01	4.3	3.22±0.01	4.4
	Best	5938±81	18.1	3.99±0.02	5.5	3.26±0.01	5.1
51-75	1	4852±46	19.7	3.95±0.01	4.4	3.24±0.01	4.4
	Best	6157±90	16.7	4.05±0.02	5.5	3.25±0.01	4.9
Over 75	1	5244±82	18.9	4.00±0.02	5.3	3.23±0.01	5.1
	Best	6424±167	16.0	4.15±0.05	7.0	3.31±0.02	4.4

breediness exceeded all the rest in the index ($P < 0.05 - 0.001$). The increase in the breediness brings about certain stabilization of high yields that are characteristic for Holstein breed. The content of butterfat is higher in Holstein crosses than that in Black-and-White cattle and it is an important feature of the formers. The priority of different groups over Black-and-White animals constitutes 0.05 - 0.24% ($P < 0.05 - 0.001$). During hybridization the content of protein butterfat increased in crosses too though less than that of protein free butterfat.

Considerable variations in the frequency of individual erythrocyte antigens are observed resulting from the increase in Holstein thorough-breediness. The frequency of antigens O₂, J₂['], V, J, U["], B['] went up 1.9 - 13 times in animals with over 75% level of the breediness as compared to that in Black-and-White ones. In contrast to the crosses the frequency of blood factors G["], C₁, C₂, W, M, P₁, S₁ in purebred Black-and-White animals was 1.76 - 2.41 times higher than that in the hybrids.

During the production of Siberian type Black-and-White cattle steady monitoring is carried out over the change in the genetic structure of the population for erythrocyte antigens. The monitoring has been done over the change in the genetic variability for productivity characters, resistance to diseases, immune reactivity and metabolism.

The study of the complex of indexes permits to do necessary corrections in breeding procedures.

REFERENCES

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