УДК 636.2.082

Exterior features of the udder of cows of different genotypes

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Abstract: *The article presents the results of the influence of bulls - fathers and their selection to the initial breeding stock on the severity of individual traits and a comprehensive assessment of the exterior of the udder of cows - daughters. The share of the influence of bulls-fathers on the severity of individual traits ranged from 0.3 to 8.6% in the total recorded livestock. In hybrids, on average, it was higher and more diverse (from 1.0 to 8.6%) than in purebreds (from 0.3 to 5.9%).*

Keywords: *exterior of the udder of cows, genotype, proportion of the influence of bulls, breed*

In recent years, in the Kaluga Oblast, due to the rational organization of breeding and artificial insemination of livestock, the genetic potential of milk production of ordinary herds has increased to 6,000 kg or more per lactation. The level of realization of the genetic potential of livestock productivity depends on a number of factors: feeding, housing, resistance to diseases, stress, suitability for machine milking.

Suitability for machine milking is determined by a large group of functional and morphological characteristics. There are about three dozen of them, most of them are well inherited, and exterior ones are manifested regardless of the conditions of keeping and feeding.

According to individual authors [1, 2], the losses of farms from the unsuitability of cows for machine milking can reach 15% of the gross milk yield. In recent years, in a number of large farms, a tendency towards an increase in the proportion of animals with udder defects has been revealed [3].

It follows from the foregoing that an effective system is needed to improve the dairy herd for suitability for machine milking. Improving the livestock is impossible

without knowledge and a clear understanding of how well and what is good or bad the herd, and what it should become in the future.

Purpose of the study - in a herd of black-and-white breed, the influence of bulls - fathers and their selection to the initial broodstock on the severity of individual traits and a comprehensive assessment of the exterior of the udder of cows-daughters - was studied.

Material and research methods: A total of 200 cows from mothers from the Frans 247 line and four pairs of bulls were counted. In each pair there were purebred black-and-white and Holstein bulls - analogues in terms of the level of milk production of their maternal ancestors. The black-and-white bulls belonged to the Frans 247 line, the Holstein ones to the Vis Aydial 933122 line.

The daughters of bulls of each pair were analogous in terms of time of birth (± 5-10 days), were raised and kept from birth to the end of lactation in exactly the same conditions: in the same group cages, in the same premises, on the same rations, etc.

As a result, there were 8 groups of cows (according to the number of fathers), four of them are purebred black-and-white breeds (100 heads) and four groups (100 heads) of half-breeds.

The exterior features of the udder were studied according to the methodology of T.A. Polezhaeva. (Kaluga, 1987) [4]. For each cow, 18 individual traits (66 of their characteristics) were assessed and recorded in the scorecard, and an assessment was given for a complex of traits, broken down into categories: Category I - animals without defects, III - category - cows with one or more major defects in the exterior of the udder.

Results of the study. Table 1 shows the characteristics of the studied groups by the presence of animals with a positive characteristic of six traits and the specific gravity of cows in categories I and III. All groups differed sharply from each other in terms of individual characteristics and a comprehensive assessment.

Table 1 - Characteristics of the exterior of the udder of cows of different genotypes [x)]

Positive characteristics of udder	Specific weight of cows,%	The share of the

conformation traits				influence of the fathers	
	$M_1 \pm m_1$	$M_2 \pm m_2$	$D \pm md$	η_1^2	η_2^2
Uniformity of development of lobes	58.8 ± 4.75	69.7 ± 4.69	10.9 ± 6.68	0.33	4.7
Symmetry of development of lobes	68.4 ± 4.36	80.8 ± 3.89	12.4 ± 5.84	5.9	1.8
Tub-bowl shape	10.9 ± 2.99	11.1 ± 3.41	0.2 ± 4.54	0.82	1.0
Horizontal bottom	18.1 ± 3.72	15.6 ± 3.05	-2.5 ± 4.81	3.4	8.64
Average nipple diameter	95.3 ± 2.15	92.2 ± 2.91	-3.1 ± 3.62	3.5	0.96
Average position of the nipples	97.4 ± 1.54	81.8 ± 3.58	-15.6 ± 3.89	3.4	3.5
Category I	40.1 ± 4.68	50.1 ± 5.04	10.0 ± 6.88	1.9	2.3
Category III	4.9 ± 2.13	14.5 ± 3.41	9.6 ± 4.02	4.8	1.3

x) genotype 1 (n = 100) - purebred black-and-white breed with moderate inbreeding in the Frans 247 line;

genotype 2 (n = 100) - half-bred hybrids with Holsteins, cross lines of Frans x Vis Aidial 933122.

In each genotype, the offspring of 4 fathers - the same age (5 ± 10 days) at birth.

The difference in the average indicators of purebreds and hybrids ranged from 12.4% for the symmetry of the development of lobes to 15.6% for the location of the nipples. The hybrids simultaneously surpassed purebreds in the specific weight of animals of categories I and III by 10 and 9.6%, respectively. However, in almost all cases, the breed differences were not very reliable due to the large differences between the offspring of bulls.

The share of the influence of bulls-fathers on the severity of individual traits ranged from 0.3 to 8.6% in the total recorded livestock. In hybrids, on average, it was higher and more diverse (from 1.0 to 8.6%) than in purebreds (from 0.3 to 5.9%).

Conclusion

Thus, the individual properties of bulls-fathers have a greater impact on the quality of the udders of daughters than the breed characteristics of their genotype. In this regard, the usual assessment of milk yield, fat content, protein in milk and the development of daughters should be supplemented by an assessment of the conformation of the udder of daughters both in purebred breeding and when crossing the livestock with Holstein bulls.

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