

T. A. Kruglyak. The genealogy relationship of Holstein bulls in Ukraine

The grades of genealogy relationship of bulls with the head of bloodlines are not equivalent in each genealogical formation and are stipulated by the number of animals (branching) in bloodline, their diversity, distance from the head of bloodlines and system of selection. Thus, the coefficients of kinship of bulls, descendants of which have 5 and more ranks in genealogy: 1427381 Chief (n = 79), 1650414 Valiant (n = 10) and Elevation 1491007 (n = 64) with the ancestors of these bloodlines were 5,67; 8,81 and 8,37% respectively.

Slight higher coefficients of genealogical kinship of bulls with successors of Chief bloodlines – Blackstar 1929410 – by 2,28 (7,35%) and Belwood 2103297 – by 1,67% (6,37%), due to the use of the last ones in the pedigrees of these bulls on the maternal side.

Significantly higher coefficients of genealogical kinship of bulls of Starbuck 352790 bloodlines (n = 112) were with the ancestor and successors of this bloodline. Thus, the coefficient of kinship of bulls of Starbuck bloodline with their ancestor was 13,4% and with successors Aerostar 383622 – 16,9%, Mtoto 6001001962 – 9,0%, Storm 6820564 – 10,9% and Shottle 598172 – 9,8%.

It was found that the highest coefficient of genealogical kinship was at the bulls of new lines and related groups Marshal 2290977 – 30,5; Toystory 60372887 – 18,5; Buckeye 130588960 – 14,8; Goldwyn 10705608 – 19,1; Shottle 598172 – 25,1%. This is because the offspring were at 1-2 generations from their founders.

The high interline genealogical kinship of bulls was revealed. Thus, the coefficient of genealogical kinship of bulls of all the bloodlines with progenitor of Starbuck 352790 bloodlines was 0,96-13,4 and with his son Aerostar 383622 – 2,9-16,9%.

Average degrees of kinship of bulls of all the population with these leaders of the breed were also quite high (8,16 and 11,42% respectively). This shows the great saturation of pedigree of all the Holstein bulls by genes of Starbuck 352790, Aerostar 383622 and Elevation 1491007, which complicates scheduling the breeding selection even at crossing bloodlines because ancestors of the same bulls of several lines are in pedigree of animals of each bloodline. This explains increasing inbred cows in the latest generation of Ukrainian Black-and-White Dairy cattle to 71,3-91,3%.

Perhaps for restraining growth of the number of inbred cows, US experts prolong duration of hereditary qualities transmission of a founder in generations by creating so-called "inbred" lines. To do this, for carefully selected mothers of bulls with high levels of economic useful traits (yield, fat and protein contents) of some line are selected bull-leaders of the same line with similar breeding values (homogeneous selection). Using inbreeding of different degrees from remote (V-V) and moderate degrees (III-IV, IV-IV) to close one (II-II, II-III, III-III), inbred animals are obtained and bred "in itself" again (integrated inbreeding). Probability of obtaining larger number of animals with hereditary traits of ancestor's performance increases. So, 30 (8,77%) of 342 bulls used in Ukraine, are obtained in this way and bulls of only this line used as fathers in 4 ranks of their pedigree.

Use of moderate and remote levels of inbreeding on ancestors of lines maintains high genealogical kinship of animals at their distance in generation and accumulation of valuable traits in populations which are inherent for ancestors of lines.

Share of inbred bulls in all the lines is quite high – 80,7%. On average, 15 bulls were obtained as a result of the close degree of inbreeding in the population (II-II, II-III). The number of moderate levels of inbreeding (II-IV, III-IV, IV-IV and IV-V) at obtaining these bulls was 244 and remote one (V-V and above) – 195.

In addition, 116 fathers and 59 mothers received as a result of various degrees of inbreeding were found in the pedigrees of the bulls. Among them 15 animals (8,57%) were as a result of close degree of inbreeding, 127 (72,6%) – moderate and 33 (18,8%) – remote; it also forms the genealogical relationship between bulls of various lines.

Thus, the rate of genealogical kinship characterizes the intensity of using bull-leaders, ancestors of bloodlines and their successors for breeding stock, from both paternal and maternal sides of genealogy and genealogical relations between some bloodlines, it is important to consider while forming further genealogical structure of the breed and breeding selection as at breeding herds, so at production ones of domestic dairy cattle.

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