

N. V. Sokolovska, O. D. Biryukova. Influence of genotypical and paratypical factors on the disease incidence of limb in Ukrainian Black-and-White Dairy cows

Introduction. In the world there is widespread lameness in the dairy cattle herds. More than at 90% cases lameness is conditioned by affections in area of a hoof. The affections of extremities at cattle inflict considerable economic losses through the decline of the dairy productivity, reproductive function, loss of pedigree value, protracted treatment and premature culling. Principal reason of illness is violation in feeding and keeping of cows, thus they not always are related to the failure to observe of norms of feeding; it is necessarily needed to take into account comprehensibility of nutrients of feed, productivity of cows and genetic inclination them to the diseases. At the same time it follows to take into account the inherited factor, especially in relation to the form of hoofs, quality of hoof horn and others. It is set that a form of hoofs is a trait which is well inherited.

To the preventive factors belong breeding measures, foremost. In Ukraine Holstein population increases annually, part of heredity of Holstein breed grows in the herds of domestic dairy breeds. The high-producing cows of Holstein Friesian breed have a genetic predisposition to chronic and subclinical laminitis of extremities, that conditioned by the friable structure of hoof horn, structure of back legs, by the size of angle between soil and dorsal wall of hoofs and weakness of copulas. Taking into account it the actual is a study of problem of morbidity of extremities and evaluation of the state of hoofs for cows.

The aim of our researches was study of influence of genotypical factors on morbidity of extremities in Ukrainian Black-and-White Dairy cows.

Materials and methods of researches. Researches of the state of extremities in cows were conducted in the herd of "Osrikiyvske" farm (Kyiv region) at Ukrainian Black-and-White dairy breed. The statistical processing of data and analysis of variance were conducted by M. A. Plokhinskiy method (1969) using STATISTICA 6.0 software. Elements of ethological researches and materials of veterinary records at the farm were used for identifying cows with the diseases of extremities. Amount of the cows taken into account is 470 head.

Results of researches. According to State breeding register in 2015 the average dairy productivity of cows of the herd at "Osrikiyvske" farm was 7731 kg of milk per year. The dairy productivity of first-calf heifers was over 6000 kg of milk, the level of milk yield during the third lactation increased by 16%.

Observation of the animals in the herd during milking, consumption of feed and movement showed that 9.4% of cows had traits of lameness, 45% of them were first-calf heifers. Average milk yield of healthy cows (6756 ± 133.0 kg) was significant ($P < 0.05$) and higher, than in limping cows (5654 ± 329.0 kg). It follows, that at comparison of healthy first-calf heifers and those which limped, this difference was greater (7001 ± 145 against 5391 ± 305 kg accordingly, $P < 0.05$). In both cases the difference is significant.

Considerable divergences of frequency of limping cows were found in progeny of different bulls. Frequency of cows with sick extremities in progeny of bulls D.Lobbi 16210, L.Kingli 9948, G.Tandem 34213 was within the limits of 7%. Mostly

sick extremities were in daughters of bulls Vasari 18899, A.Audini 55912 – 20 and 13.3%, accordingly.

Circumstance that the level of morbidity of extremities for daughters of different bulls is different, can testify to influence of father on this trait. However, by results of the analysis of variance it was not found significant influence of genotypical factors on morbidity of extremities at Ukrainian Black-and-White dairy cows. So, force of father's and line influence on the investigated trait was -0.22 ± 0.31 ($P > 0.05$) and 0.043 ± 0.04 ($P > 0.05$), accordingly.

Also it was not revealed significant influence of sequence number of lactation on morbidity ($\eta^2_x = 0.012 \pm 0.01$ ($P > 0.05$)). But significant influence of level of the dairy productivity (milk yield, kg) on health of extremities ($\eta^2_x = 0.018 \pm 0.03$ ($P < 0.01$)) was found.

Conclusions. 9.4% of limping cows were found in the herd of "Osrikiyvske" farm. Reliable influence (1.8%) of dairy productivity on health of extremities was revealed. It was not educed significant influence of factors "father", "line", "sequence number of lactation" on the investigated trait.

Thus, selecting animals for the increase in dairy productivity, it is necessary to search ways and methods for increasing durability of hoof horn for the sake of increase in productive use duration of cows.

Keywords: cows, Ukrainian Black-and-White Dairy breed, lameness, diseases of distal portion of extremities, frequency of morbidity