

*Y. I. Sklyarenko, T. A. Chernjavskaja, I. P. Ivankova. Prediction of productivity of dairy cows by different ways*

**The aim of the research** is to establish the relationship between milk productivity and exterior feature of animals on the basis of relevant indices and the possibility of predicting the next lactation milk yield and lifetime productivity.

**Method.** The research was conducted in the conditions of State Enterprise "Pilot Farm of Institute of Agriculture of Northern East of NAAS" during the period 2007-2015, at 50 cows of Sumy interbreed type of Ukrainian Black-and-White Dairy cattle. Exterior of first-calf cows (2007-2008), by taking measurements (by the conventional method) was studied for research period. To determine the level of milk productivity we analyzed a database of SUMS ORSEK of the enterprise. To calculate the required index the following methods were used: determination of udder-mass-metric index (I. P. Petrenko, 2003); udder shape – the ratio of measurements of its length and width (the cows whose udder length dominates over a width by 15% or more were recorded as with a bath-shaped udder, a bowl-shaped udder – within 1-14%, a round-shaped udder – less than 1% (Y.P. Polupan and T.P. Koval, 2006)); conditional value was calculated as the product of the measurements of girth and depth (Y. Brantov, 1965); the indices of format and the relative values were calculated by the formulas proposed by Y. P. Polupan (2006, 2008); the ratio of production typicality was determined by the method (B. A. Nichic, 1987). Statistical processing was performed using the program MS Excel.

**The results of the research.** The research indicates that the best results for the prediction of future productivity of cows can be received by calculating the ratio of the production typicality. According to the value of this index, the animals, related to dairy type of production, dominated over the animals, related to meat and milk type, respectively, for the first lactation – by 29%, for the third – by 8%, for a lifetime productivity – by 63%. This indicator can be calculated only in the presence of information of productivity at the first lactation, therefore, the prediction of the future performance occurs almost a year later than the other indexes.

The indexes, which include the rates of morphological udder traits in their calculation, do not give the consistent results. The obtained values indicate that the improvement of morphological traits of an udder to some extent helps to improve milk productivity and allows predicting the future performance of animals.

So, the animals with a bath-shaped udder are superior to peers with a bowl-shaped udder for the first lactation by 1,5%, and for the third lactation – by 14%. Greater total milk yield for the lifetime had animals with a bowl-shaped udder.

Analyzing the obtained data, regarding the relationship between udder-mass-metric index with the magnitude of the milk yield for the first lactation, we can note its reliable effect on these traits.

**Conclusions.** The different methods of predicting the productivity of dairy cows on the basis of calculation of indices and ratios are researched. It was found that the most successful measure that allows predicting the milk productivity for

individual lactation and lifetime productivity is the ratio of the production typicality. The indices calculated on the basis of morphological traits of an udder give ambiguous results on the prediction of dairy cows' productivity.

*Keywords:* **index, coefficient, morphological traits of udder, milk yield, body measurements, lifetime productivity**