Original article

Robotization of farms - new criteria for the selection of first-calf heifers

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Abstract. The study was carried out at the farm "Zhappueva Zh.Kh." in the Baksan district of the Kabardino-Balkarian Republic. Swiss-breed cows were used for the study. A new approach for the selection of Swiss breed first-calf heifers in the third month of lactation has been proposed. The selection of primary heifers is carried out according to the morphological indicators and the functional characteristics of the udder, as well as the number of visits to the robotic milking, according to the following principle: The average number of visits to the milking robot is set by the calculation of the standard deviation (σ) of the herd from the arithmetic mean. The first–heifer cows with indicators less than the herd average by 1 sigma (X- 1σ) were subject to exclusion from the herd. The distribution of first-calf heifers according to this principle resulted in a culling rate of 13%. Heifers retained for further use visited the milking facility 42% more than those in the culling group ($P<0.001$). The first-calf heifers left in the herd according to this principle exceeded the culling peers in terms of milk productivity by 31.3%. The technical capabilities of the milking system ADM-8A (traditional) and the installation of the robotic "DeLaval" were analyzed. The use of an automated control system for all production processes on a dairy farm allows to create the most positive physiological conditions for animals, which increases milk yield while improving its quality by 12–18%, reduces the cost of production by 25–30%, increases the number of calving and the period of use of highly productive cows.

Keywords: robots, robotization, automation, farm, cows, selection of first-calf heifers, milk productivity, milk quality, production efficiency

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