– identification of "critical points" of microclimate deterioration and constant monitoring of their condition, can help to prevent decrease of animals welfare and productivity;

– the fact, that even 24-hours use of powerful axial fans was insufficient in creating comfortable conditions in the animals resting zone, indicates the need for using additional technical solutions (such as drip irrigation) to normalize the microclimate in the hot period;

– adaptation of intellectual ventilation should take into account the peculiarities associated with the individual physiological and behavioral responses of cows to real microclimatic conditions.

Conclusions. Research should not be confined by only monitoring the microclimate in uninsulated sheds (though there are still many tasks left), but now it is more important to predict it and to develop "intelligent" ventilation systems based on mathematical modeling. Our previous studies indicate a high accuracy (> 90%) of predicting the temperature and humidity index in uninsulated sheds, depending on weather conditions. Further research will focus on developing an algorithm for applying mathematical modeling to predict cow comfort and find reliable markers of their welfare during the hot summer season.

Key words: uninsulated cowsheds, microclimate, welfare of cows, heat stress, monitoring.

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NEW APPROACHES TO ASSESS THE REPRODUCTION OF HIGHLY PRODUCTIVE DAIRY COWS

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Наведено рівняння коефіцієнта відтворення стада (Rh), для розрахунку якого достатньо три основних показника: кількості отелень за життя (визначається фізіологічним станом органів і систем організму корів); збереженості телиць (обумовлена здоров'ям отриманого молодняку від народження до першого отелення) та відсотку народжених телиць (зумовлений генетичними особливостями тварин). Однак за промислового виробництва молока, де значна кількість високопродуктивних молочних корів вибуває зі стада впродовж перших лактацій, виникає доцільність до запропонованого рівняння Rh ввести додатковий (поправочний) коефіцієнт, що відображає реальний стан обороту стада на підприємстві.

Introduction. Long-term breeding selection for increased milk yield and milk composition led to a deterioration in the reproductive function of cows. To characterize the state of reproductive performance, such indicators as the duration of the service period (SP), the dry period (DP) and the calving interval (CI) are traditionally used. However, none of these indicators reflect the state of reproduction in the herd objectively.

The aim of the study was to evaluate herd's reproductive capacity on a large dairy complex by using a minimum set of objective data.

Methods. To assess the state of reproduction on the dairy complex of CJSC Agro-Soyuz (Ukraine), 9376 Holstein cows from the 1st to the 7th completed lactation with a milk yield of 37.8 ± 0.92 kg milk per day were selected. As an integral indicator of the cows reproductive potential, the herd reproduction ratio (Rh) was proposed by Proshin and Loskutov (2011):

$$Rh = C \times H \times S,$$

where Rh is the herd reproduction rate, C - is number of calving during the life, H - is the percentage of heifers / 100, S - is heifers survival / 100.

This ratio (Rh) objectively characterizes the state of herd reproduction, since it shows the number of heifers per rejected cow. If the Rh is greater than 1, the herd will increase, and if it is less, the number of cows will decrease.

Results. The herd's reproductive performance values were: SP = 182.3 ± 7.78 days, DP = 52.4 ± 0.16 days, and CI = 467.6 ± 7.87 days. To achieve pregnancy, the average numbers of insemination were 2.6 and 2.1 for cows and heifers respectively. Pregnancy was determined on day 32 after insemination by using ultrasound diagnostics. Survival of heifers before fertilization was at the level of 82.1-86.7%. As an integral indicator of the cows reproductive potential, the herd reproduction ratio

(Rh) was calculated, based on number of parities, percentage of heifers, and heifers survival.

It was found that for the normal herd reproduction in the CJSC Agro-Soyuz it is necessary to have at least three calvings per cow (Rh = 1.2). However, even the optimistic average indicator value for the herd (Rh = 1.7) does not reflect the real situation, since, as a rule, the majority of high-yielding cows drop out of the herd during the first three lactations. In present study, the proportion of cows from the 1st to the 3rd completing lactation was about 89% (Rh = 0.8).

Conclusions. Thus, to assess the herd state of reproduction, the three main considered parameters may be sufficient for herd decision making. We propose that additional factors could be considered for the overall reproduction efficiency and herd turnover calculations.

Key words: cows, heifers, survival, reproduction, estimated coefficient.

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CONTROL OF THE CONTENT OF LACTOBACTERIA IN FODDER PROBIOTIC ADDITIVES

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Бактерії роду Lactobacillus spp. є найбільш поширеними представниками нормофлори в складі різних пробіотичних полікомпонентних кормових добавок. Вони виконують в кишечнику тварин цілий ряд важливих функцій по виробленню травних ферментів, ряду незамінних амінокислот, вітамінів,