

Thus, the results of the research show that in the conditions of industrial technology of pork production the economically important indicator is the «operational value of the sow». The use of animals of the category «high operational value» provides additional production for multiplicity at the level of 4,76 %, weight of the nest at the time of weaning at the age of 28-32 days – 1,02 %.

Key words: sow, reproductive qualities, operational value, cost-effectiveness

How to Cite

Khalak, V., Chernyavs'ky, S. & Chegorka, P. Operating value and economic efficiency of using sow of the universal direction of productivity. Proceedings of the 1st International Scientific and Practical Conference AWCGCC, April 21-22, 2020. Dnipro, 2020, 73–75.

PROBLEMS RELATED TO ENSURING THE COW COMFORT IN UNINSULATED COWSHEDS DURING THE HOT SEASON

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Узагальнено результати щодо особливостей формування температурно-вологісного режиму в неізольованих приміщеннях та проблеми, пов'язані з забезпеченням комфорту корів в періоди літньої спеки. Окреслено перспективні напрями досліджень з цієї проблеми.

Introduction. Livestock should be favorable to animals and the environment. Although uninsulated and free stall sheds are considered the most animal-friendly, this system is particularly vulnerable to climate change due to the increase in heat

waves and their duration in the eastern and south-eastern regions of Europe. That is why, it is important to prevent cow heat stress keeping them in comfortable conditions. The aim of this work was to summarize the world experience and the results of our own research on the microclimate formation and monitoring in uninsulated cowsheds during the hot summer period in central Ukraine.

Methods. The latest scientific publications of domestic and foreign researchers were the theoretical background of the study. The experiments were carried out on the dairy farms “Agro-Soyuz” and “Ekaterynoslavskiy” in uninsulated cowsheds during the hot summer period. The work was a part of the research work of the department of technology of processing livestock products "The influence of technological factors on improving the quality of livestock products" (state registration number 0114U005590). The WS-10 remote sensors of the thermo hygrometer (Ambient LLC, USA) were used. They were fixed at the animals resting level directly in the central and extreme boxes of the shed sections. The daily dynamics of temperature and humidity were recorded every 5–20 min. not only indoors, but outdoors in the shade. Mathematical data processing was performed in the program "STATISTICA 10" (StatSoft, Inc., USA). The significance of the difference was determined by the U-test of Mann-Whitney.

Results. In accordance with the results both our colloquies and our own, it is possible to formulate some problems, connected with creating comfortable conditions for cows in uninsulated cowsheds:

- modern large cowsheds (for 600 cows and more) hang up additional requirements to the systems of microclimate and need new approaches to its assessment and normalization;

- the reason for the calculations is an active application of new foreign technologies and equipment without taking into account the climatic peculiarities of the region, which leads to unforeseen deviations of real air environment parameters and unjustified use of the ventilation systems capacity;

- despite the high dependence of the microclimate in the sheds on the environment, on the one hand, their design features prevent excessive air overheating during the day heat (creating shady protection for animals), and on the other, lead to a delay of heated air (when indoors it is cooled), thus prolonging the influence of high temperatures on the body;

- it is detected not only the differences between air environment inside and outside the sheds, but also a significant difference in its formation in different parts of the shed, according to the location of the buildings to the sides of the world - that is, the intensity of the warming of individual parts by the sun during the light period;

- the peculiarities of air environment formation indicate on differentiated approach to the mode and duration of the cooling systems application during the day for different parts of the room with natural ventilation;

– 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.

How to Cite

Mylostyvyi, R., Sejian, V. & Hoffmann, G. Problems related to ensuring the cow comfort in uninsulated cowsheds during the hot season. Proceedings of the 1st International Scientific and Practical Conference AWCGCC, April 21-22, 2020. Dnipro, 2020, 75–77.



NEW APPROACHES TO ASSESS THE REPRODUCTION OF HIGHLY PRODUCTIVE DAIRY COWS

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