

Behavior of highly productive cows in the winter at loose housing box growing

T. Shkurko,
doctor of agricultural sciences
Dnepropetrovsk state agrarian-economic university

The purpose. To study features of behavior of highly productive cows in the winter at loose housing box growing in rooms of semiopen type. **Methods.** Behavior of cows was studied according to A. Bondar procedure. Temperature and relative humidity of the air in cowhouse was determined according to V. Balanin procedure. **Results.** It is determined that cows were in standing position in the winter more hours than in the summer (for 23,5%). Thus animal on the average 2,09 h a day stood on passage near feed table, and the rest of the time (2,33 h, or 52,7%) — in boxes with sandy litter or only with forelegs in boxes. Cows were active for 40,29%, and passive for 59,71% of time of a day. **Conclusions.** In the winter indexes of temperature and relative humidity of an air of the room of the facilitated type deflect from the optimum. That results, in comparison with the summer season, in increase of time on consumption of feedstuff up to 27,37% of a time of day, and duration of their standing to 4,42 hours and decrease of duration of repose of cows laying for 1,04 h.

Key words: cow, behavior, loose housing box growing, a microclimate.

I.M. Sechenov determined life in all stages of its development as adaptation to conditions of existence [1]. At this it is impossible to conduct a clear border between reflexes and complex behavior forms [2, 3, 4]. Animals behavior is built on the basis of continuous properties comparison of external irritants influencing on them with the display of the eventual adjusted result programmed in acceptor organs of action result. Knowledge of behavior, ability to foresight and to control it is very important, especially under specializations and stock-raising condition at industrial technology of production. Cows adapt to daily order (feeding regime, milking and manure removal). Accordingly to it characteristic proof periodicity and repetition of behavior elements is set among them.

Any behavior program is built on three basic determinants: dominant motivation, memory and estimations of current situation. And animal organism to provide its surviving and comfort forms new correlation between separate structures, organs, processes, new individual behavior. At that on individuals, for which the maintenance terms do not suit and dissatisfy their biological necessities, they act as stressor and cause the violation of physiological balance. Lack of knowledge and their ignoring unavoidable will result in productivity reduction animals. Not to permit this it is necessary to know the specificity and intensity of these factors action. At that animal's behavior and some their reactions are the reliable criterion of estimation of maintenance terms at different production technologies [5-10].

There is no doubt the development of milk cattle breeding in Ukraine will go by way of technic-technologic re equipment of this brunch. That's why setting and grounding of the main demands as to ensuring of comfort maintenance, feeding, milking will have the key meaning at introduction of progressive technologies of milk production. The use of ethological researches enables the possibility to estimate the conformity of each technology of animals maintenance with taking info account their biological, needs, which will promote the saving of health, the lengthening of productive use duration, the additional products receiving and the rising of cattle-breeders labors productivity.

Purpose of work. To learn the features of display of basic forms of behavior by high-producing dairy cows in winter at free-stall cubicle mode of housing in the barns of facilitated half-open type.

Method of researches. Studying of behavior of Holstein's milking cows of the first third of lactation at large group free-stall cubicle housing was conducted at intensive technology of milk production in the conditions maintenance "Agro-Sojus" firm of Dnipropetrovs'k region. The number of animals in technological group was 105. Milking every 8 hours in the hall "Parallel" type with milking and technological equipment of "BOU-MATIC" firm. All year round cows were fed by valuable on-type fodder mixtures from the forage tables. Manure removal from the barns is carried out by delta scrapers with its further transporting by drift to the dung bunkers. Boxings The delete of pus from the apartments is carried out for help delta of card with the subsequent transporting by his drift to dung. Boxings for resting have sandy bedding.

The indexes of cows behavior were studied accordingly to their technological principle classification by the method of visual chronometric supervisions in accordance with A.A. Bondar's methods [11]. Determination of temperature and relative humidity in the barn was conducted by V.I. Balanin's method [12].

Results of researches. The analysis of daily chronometric supervisions of Holstein's cows behavior at large group free-stall cubicle housing showed that under the given condition of existence the cows work out behavior stereotype, which is determined, mainly by carrying-out the technological processes of feeding, milking and their number. Most of daily time the animals spend on forage consumption and rest lying, 6,57 and 9,92 hours accordingly (figure 1).

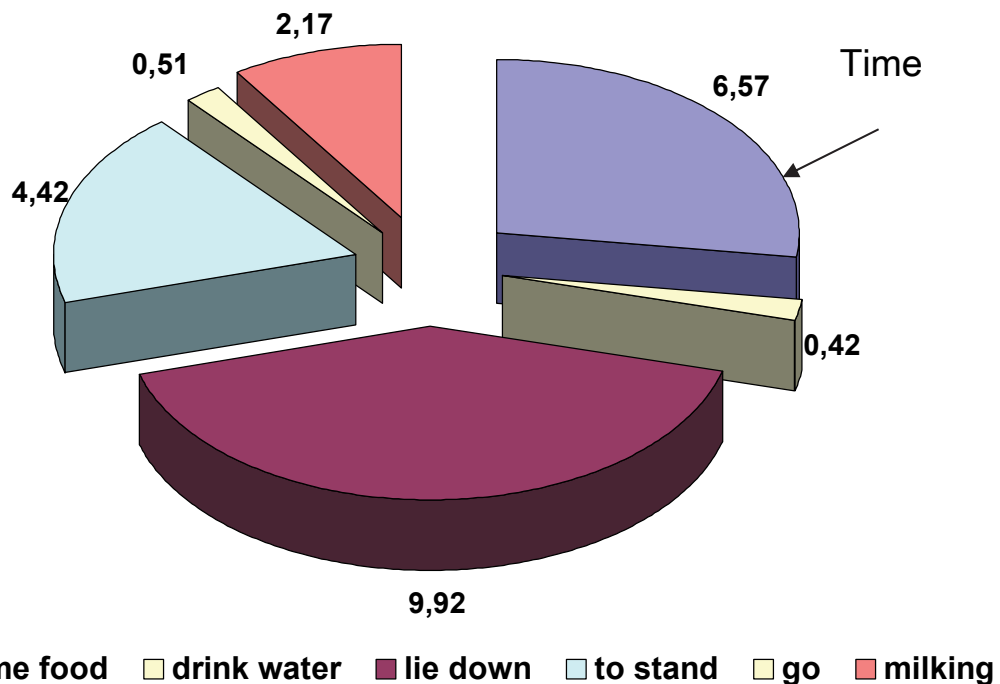


Fig. 1 Indexes of high productive cows behavior for day and night at free-stall cubicle housing in winter

At comparison of these data with the got indexes of similar chronometric supervisions, conducted in summer, it was set, that in summer period the cows spent considerably less time for fodder consumption and standing squandered, 4,59 and 3,38 hours accordingly and for the rest lying – 10,96 hours aunt of 24, that on 1,04 hours more than in winter. Index of cows rest lying in winter is 0,41, in summer – 0,46, and index of forage consumption is in winter – 0,27, and in summer – 0,19.

In winter period cows spent 4,42 hours standing, that is 1,04 hours longer as compared to the summer period. At thus it should be noted that in winter animals on the average 2,09 hours daily were standing on a passage-way near the forage table ant the rest of 24 hours, about 2,33 hours or 52,7 % they spend standing in the boxings or standing there only with forelegs (fig. 2).

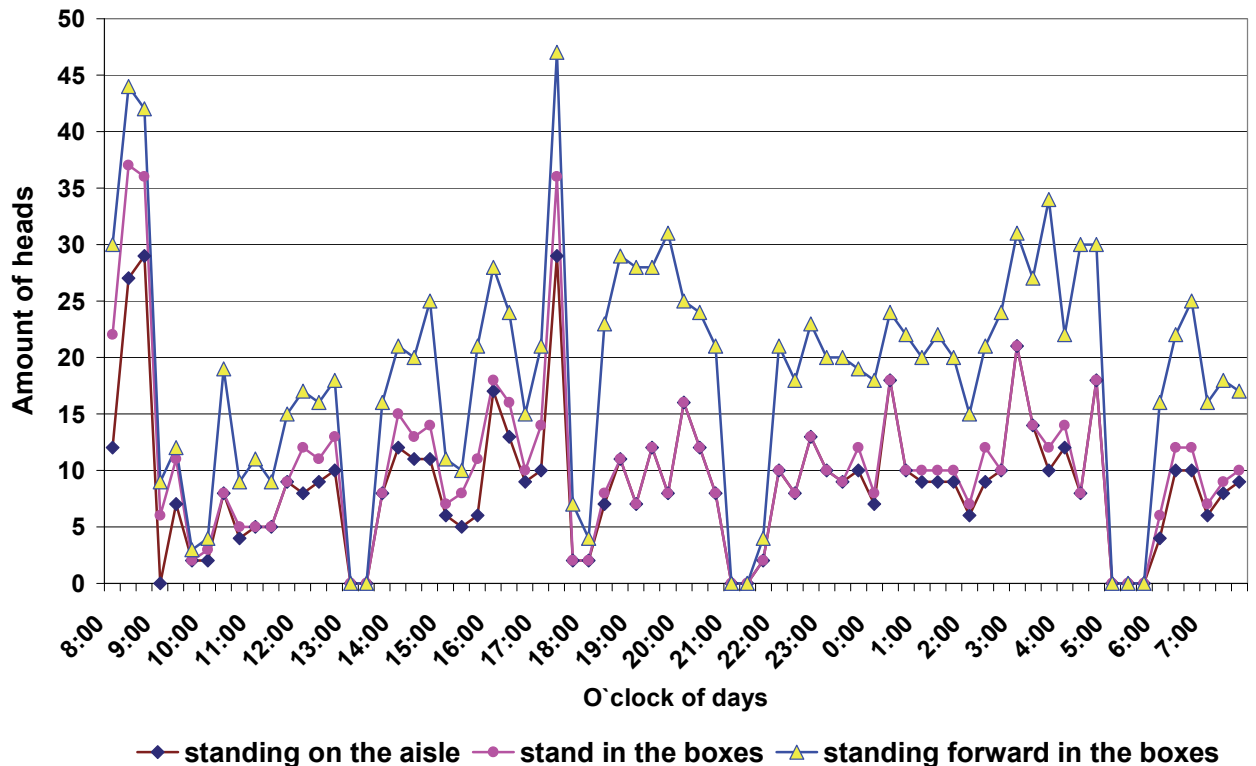


Fig. 2. Basic elements of daily cow's behavior

Taking into account that microclimate parameters in the housings of facilitated type are maximally close to those of external, at researches conducted the basic parameters of microclimate were studied: temperature and relative humidity. It was set that the middle air temperature in the housing in day time was between $12,4 \pm 0,67$ and $18,1 \pm 0,33^{\circ}\text{C}$, in the evening it fell gradually and at night and in early morning it was $8,65 \pm 0,79^{\circ}\text{C}$. Middle relative humidity was between 81 and 85 %. Thus it is visible from the data analysis, that air temperature in the barn, being the basic physical irritant of animals organism, at the night and in the morning deviates from optimum.

The hygienically significance of temperature in the external surrounding (air and surfaces) is in its big influence on heat regulation of animal organism. The bigger is the difference between the temperature of animal skin and surrounding air the bigger will be the intensive of heat return. Especially low temperatures, in combination with high air humidity, make the organism heat return more intensive. Therefore, at such conditions, all organism reactions are directed on heat emission declining and the increasing of heat generation. This explains why the animals spend more time standing in boxings or with forelegs them, and also prolong the time of forage consumption. Because in fact the metter and energy exchange is common process. In such case the super cooling of animal organism and its résistance reducing may also happen.

Accept of this the analyses of temperature indices of sandy bedding showed that the temperature on send surface is $3,2^{\circ}\text{C}$ lower that air temperature in the barn [13]. When an animal is laying 1/3 of its body surface comes info contact with the floors, why it must be warm enough [14]. Calculations testify that the losses of heat through the floor account 12-20 % of general heat losses from the housing and depend, on heat-physical floor characteristic. As X.P. Otloot1's data show, extra losses of physiology heat 100 kkal/hour in number (difference between heat absorption by 1 m^2 of concrete and wooden floor at a 12 hours duration of lying animal), is equal to 2 liters of milk as to the calorific value. Certainly, to waste fodder on creation of heat energy which is used for the floor heating, instead of transforming in to milk is very irratically.

It is necessary to take into account the fact, that in zone with cold and damp climate in winter the sand may freeze through and in boxings for animals rest hills and holes will appear, which will make the animals rest lying very uncomforted table.

Maximal activity of forage consumption by animals is observed after their returning from milking hall and especially after the new portion of fresh forage distribution: at 9 o'clock in the morning and 18 o'clock in the evening (fig. 3). On drinking water in winter cow spend 3,1 hours less than in summer.

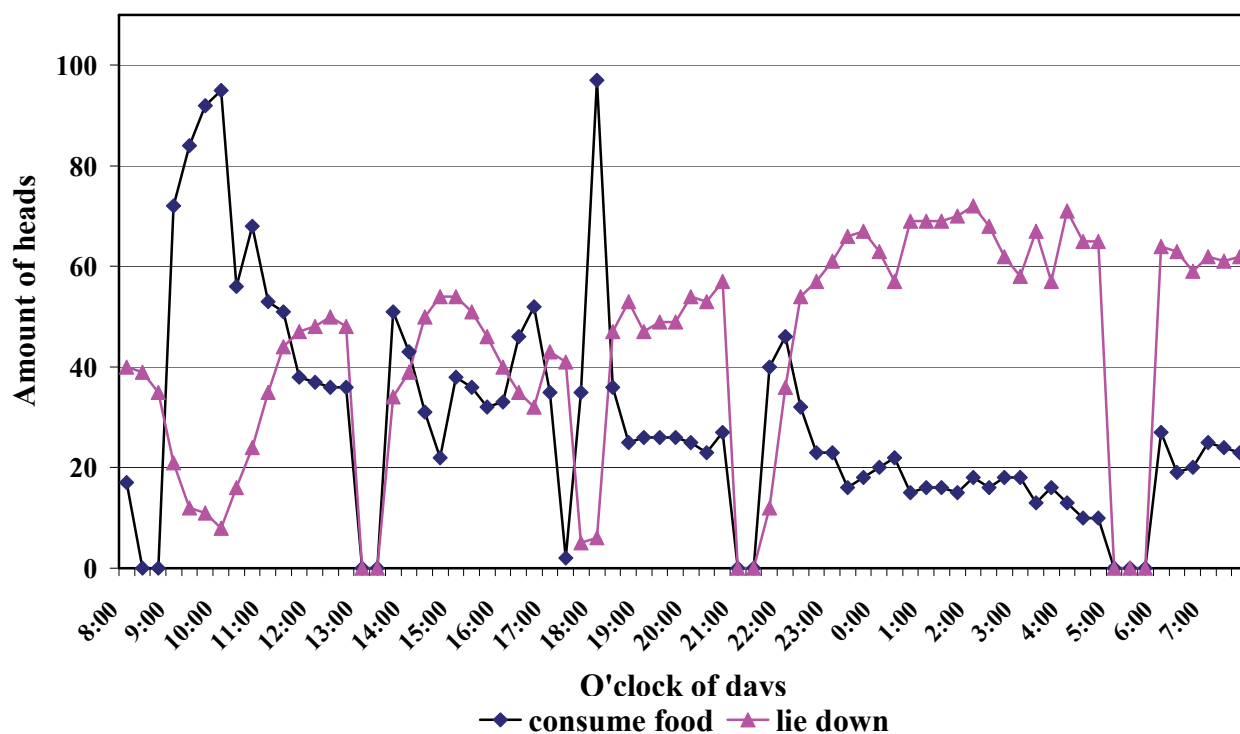


Fig. 3. Daily recurrence of forage consumption and cows rest lying

The longest cows rest lying was observed from 23.00 till 4.50 o'clock. During this period on the average 60 % of animals rested lying. As to got data 73.2 % of cows prefer resting in the certain boxing. At chronometric supervisions conducting it was also set that after every returning from the milking hall certain number of cows layed down to rest in boxings. Most of such animals were fixed after the morning milking which one more time confirms the necessity of highly productive Holstein's cattle in prolonged rest lying. In general the cows 40,29 % daily time were active (fodder, consumption, drinking water milking) and 59,71 % – passive (resting, sleeping, comfort motions).

Middle productivity of cows on a group made $31,46 \pm 0,66$ kg of milk for days with maintenance of fat in the milk 3,78 %. In the days of conducting of time-study supervisions middle day's hopes hesitated from 30,88 to 32,08 kg of milk.

Conclusions

In winter the indexes of air temperature and relative humidity in the housings of facilitated type dexiate from optimal, that predetermines, as compared to a summer period, the increasing of daily time expenditure for forage consumption till 27,37%, the extention of being standing till 4,42 hours and 1,04 hours reduction of cows rest lying.

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