

AFFECT OF BIRTH SEASON ON THE HOLSTEIN BREED CALVES' GROWTH AND DEVELOPMENT IN TERMS OF INTENSIVE REARING TECHNOLOGIES UNDER CONDITIONS OF STEPPE ZONE OF UKRAINE.

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This article deals with how the imported Holstein breed calves in “cool” way of rearing react in different natural-climatic conditions depending on their seasons of birth. Better organism ability was displayed when their further postnatal growth and development was in more favorable conditions of spring-summer season.

Studying the imported cattle breed's adaptation level in Ukraine has a significant scientific and practical importance because it determines ability of their further effective usage. Holstein breed deserves is in particular attention which has a high potential of diary productivity and specific technological qualities for its intensive industrial usage. However this highly specialized breed reacts on outward farm and natural-climatic irritants rather appreciably and able to realize its genetic potential completely only in making favorable conditions of feeding, caring and keeping [1, 2, 3, 4, 5]. For working out practical measures to ensure normal vital functions of such animals, first of all reactivity of their organism to unusual ecological-farming conditions should be found out.

Object of studying

The researches were spent on the calves groups, received from the Holstein breed cows which were imported as heifers from Denmark, Germany to joint-venture “Agro-Union” in Dnipropetrovsk region. Due to the principle of analogue (breed, age, physiological state) were formed three groups of the calves (per 10 heads) the first group was – summer-autumn seasons of calving (August-September), the second group was autumn-winter seasons of calving (November-December) and the third group was summer-spring seasons of calving (February-March). All these groups of calves were in identical conditions of breeding, caring and keeping during the time of studying. After the birth animals were kept in plastic open-air individual houses and from the age of two months they were kept in the lightly constructed calf-houses made from metal parts with capacity 600 heads. Besides the microclimate conditions in the plastic houses and calf-houses were comparable to the environmental parameters. Samples of blood were taken from one, three, six months aged calves before the

feeding for studying. With the help of universally recognized methods were determined: quantity of erythrocytes and leukocytes (calculation in a Goryayev's camera), contents of protein and hemoglobin (refractometric and hemoglobincyanide method), activity of reamin ferments (aloinaminotransferase and aspartamaminotransferase – by the Rightman-Frenkel method; lisocyme and bacteriostatic activity of serum (lisocyme activity of blood serum and bactericide activity of blood serum) by the method of Dorofeychuk V.H., Smirnova J.V. and Kuzmina N.A.; phagocytic neutrophil activity (phagocytic activity of blood serum) – by the method of Cost and Stenko. Immunoglobulin contents of G and M class we measured by the method of radial immunodiffusion in the gel due G. Mancini et al. Monthly information about macroclimatic indices was received from the Synelnykovo forecast during 2004.

Results of studying

The age dynamic of calves' blood indices had significant differences which by our opinion were mainly conditioned by their season of birth. Taking into account the fact that breed conditions (breeding, caring, keeping) for the same age of all groups were made similar, climatic conditions must be considered as prevalent factor of occurring such changes in the blood system, on the basis of which were postnatal period of organism development.

During the time of third group breeding which were winter-spring season of birth (February-March), their further growth and development coincided with more favorable average indices of external temperature and air moisture (14,3°C and 69,9%). Besides the temperature changes were at the levels from 11,2 to 33,2°C. The postnatal and development period of the first summer-autumn birth group calves (August-September) was with more cold weather conditions. During their growth and development the average external temperature was 3,6°C and moisture – 81,3% with some lowering to 17,4°C and 22%. The same age calves of the second autumn-winter (November-December) period of birth were bred with extremely cold weather conditions when the average air temperature was 2,1°C and moisture – 82%. The temperature lowering was to 17,4°C. It have to be mentioned that such weather conditions had direct affect on the organism of experimental animals taking into account their “cold” keeping method in the farm.

Such exogenous influence of environmental factors cold help told on the state of animals' organism protective abilities. The results of our hematological researches prove that the calves of the third group which had their postnatal growth and development mainly on spring-summer period with the most favorable temperature, air moisture and weather conditions, had better indices then the same age animals of the first and second groups, which

were bred on “cold” seasons. The third group animals of winter-spring season of birth had better indices than their analogues from the first and second groups, which were born in summer-autumn and autumn-winter periods: ferment remain activity was better for 1,6, and 1,9 times, hemoglobin content - over 17,0 and 9,9%, leukocyte quality – over 9,7, and 12,8%, lisocyme activity of blood serum – over 11,7 and 9,7%, bactericidal activity – over 8,4, and 14,3%, phagocytic activity – over 25,3 and 24,1%. These differences especially significantly were shown among 30 days age animals. The third group animals of that age comparing with their analogues from the first and second groups we noted such increasing: alaminaminotransferase – over 1,2 and 2,0 times, aspartaminotransferase – over 1,4 and 1,3 times, hemoglobin contains – over 17,8%, erythrocytes quantity – over 24,1 and 15,1% , leukocytes – over 13,1 and bactericide activity of blood serum – over 1,4 and 1,3% times.

In another age periods these differences were not so significant and in six month age the calves of all experimental groups due the blood indices had comparatively the same morphological, biotechnological and immunological state of organism. The calves of the first and the second groups had not significant differences due their hematological indices. It must be mentioned that the difference in the indices of growth energy was not noticed among all groups of animals.

Conclusion

1. Due the organism reactivity indices to the regional-climatic and weather conditions, the calves of winter-spring (February-March) period of birth have better adaptability comparing with their same age ones of summer-autumn (August-September) and autumn-winter (November-December) seasons of birth.
2. The early age (to 30days) calves react more sensitively on extremal cold climate irritants and it have to be taken into consideration in “cold” type keeping, and compensate the intensive energetical expences of the organism by increasing energetical daily diet ability.

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