

## **Physiological-biochemical and molecular-genetic bases of increasing milk production**

A.G. TARANENKO

*All-Union Research Institute of Farm Animal Breeding and Genetics, Leningrad, U.S.S.R.*

Physiological-biochemical and molecular-genetic ways for maximal realization of genetic potential of milk production are considered. The importance of milking stimuli for maintaining a high level of lactogenesis is demonstrated on prolactin. Prolactin dynamics in blood is observed when positive and negative factors affect the mammary gland during milking. Prolactin metabolism in the gland is studied. The way of prolactin effect on the genome of the secretory cells of the mammary gland is revealed. A proposition is formulated that the manifestation of the genetic potential of milk production is determined by lactation neurohormonal status of the organism, by the condition of hormonal receptors of a secretory cell of the mammary gland and by receiving hormonal information by the cell genome, which is associated with the character of milking stimuli.

### SESSION III

#### COMMUNICATIONS LIBRES

### **Computer calculation of inbreeding coefficients**

G.A.T. MAHON and E.P. CUNNINGHAM

*Department of Zoology, University College, Galway.  
The Agricultural Institute, Sandymount Avenue, Dublin 4, Ireland*

The tabular, diagonal, sampling, and pedigree methods of calculating inbreeding coefficients were critically compared. A computer program incorporating each method was written, and the programs were executed with data from 6-7 generation pedigrees for thoroughbred mares. The program for the tabular method had a large requirement for memory, while that for the diagonal method had a very long execution time. The program for the sampling method was intermediate in both respects. The program for the pedigree method was the smallest and fastest of the four and thus it was judged to be superior.

### **Evaluation of various methods of estimating the inbreeding coefficient**

J. HYANEK, R. SILER

*Research Institute of Animal Production  
251 61 Praha 10-Uhřetěves, Czechoslovakia*

Various definitions of the inbreeding coefficient of an individual for more loci and their relationship are presented. In the case of the inbreeding coefficient for one locus it is shown that it is not dependent on the gene recombination. In the regular mating system the population inbreeding coefficient is equal to the inbreeding coefficient of an individual. If there is a nonregular mating system the distinguishing between inbreeding coefficients for the individual and the population is necessary. Further on the population inbreeding coefficients for more loci according to Kimura is defined and also the difference between a regular and nonregular mating system is presented. In the end a suggestion for the use of the cluster analysis for drawing up a suitable mating plan is given.