

# EFFICIENCY OF THE ELECTRONIC CONTROL SYSTEM OF DAIRY HERD IN THE CONDITIONS OF DIGITALIZATION OF ECONOMY

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In the conditions of cyber attacks and cyber wars in the economic sphere it is necessary to enhance attention to application of information systems in economy, to address cybernetic approach in management of economic systems, in particular, in resource management of the organizations. In 2017 the State program "Digital economy of the Russian Federation" for 2018-2024 in which data in a digital form are considered as a key factor of production in all spheres has been adopted. Consideration of cybernetic approach to resource management of the organizations in digital economy is represented relevant, necessary and perspective.

Agricultural production develops on the way of automation and a computerization. It is possible to carry electronic control systems of herd to such innovations. Constant improvement of this new technology is observed, interest of landowners in her acquisition increases, however only 3-5% of dairy farms of the country have entered complex automation of management of herd.

Modern equipment of dairy farms provides application of means of multipurpose tools in dairy livestock production, electronics and touch sensors. By means of such equipment there is a possibility of measurement of content of fats, proteins, urea, lactose and other elements and substances in milk in the course of milking on each milking place. The central role in a control system of herd is played by the processor which is carrying out function of the working magazine where all information on animals collects. Here each movement of individuals on room sections is monitored, determination of key parameters of feeding and milking, maintaining the calendar of animal husbandry is carried out.

In an electronic control system of herd the transponders and identification gate united in a subsystem of recognition of animals are important. By means of the transponder (the electronic card) the cow is distinguished at an entrance to the milking hall through sorting gate. On the basis of processing of the obtained information the system estimates the state of health of an animal and makes the decision on the required amount of premixes (premixes are given to each cow individually depending on daily efficiency, a stage of a lactation and the general state).

Milking places in system are equipped with electronic pulsators and counters of milk which give an idea of efficiency of each animal. It is necessary for use of the basic principles of exact agriculture in branch of dairy cattle breeding when not the group of animals acts as object of management, and the separate individual about whom in the automated mode data collection and processing is carried out, that is conducted monitoring. Existence in a complex control system of herd of the sensor of activity gives the chance to define optimum time of insemination.

For modern dairy complexes there is characteristic a delegation of problems of observation of animals to sensors and the systems of automation. In February, 2014 the DeLaval company has officially brought to the Russian market an innovative

product – the Herd Navigator™. The Herd Navigator™ automatically carries out selection and the analysis of tests of milk, gives information to experts about approach of hunting and stylishness, risks developed mastitis, a ketoz and unbalanced feeding. The system issues the recommendation – the exact list of actions for effective management: to each risk level there corresponds the scheme of treatment – the protocol with the corresponding medicine that allows to keep track of efficiency of the scheme and the medicine. Thus, there is a possibility of saving of time and workers of a farm, and consultants.

Economic effect of application of electronic control systems of dairy herd is formed for the account, additional production and economy of charges of yalovy cows at reduction of duration service period, economy of an expense of a seed on artificial insemination, decrease in incidence venerable and ketozy and consequently decrease in rejection of cows. Our calculations have shown that aggregate annual economic effect of application of electronic control systems of dairy herd for the agrarian enterprises of Krasnodar region can exceed 50 million rubles, at the same time about 75% of economic effect are provided due to reduction service period, 10% – due to decrease in incidence of mastitis and about 15% – due to decrease in incidence ketozy. The provided information demonstrates that application of electronic control systems of herd in dairy cattle breeding is the perspective direction of development of exact agriculture in the conditions of development of digital economy and confirms expediency of use of such systems in the agricultural organizations.