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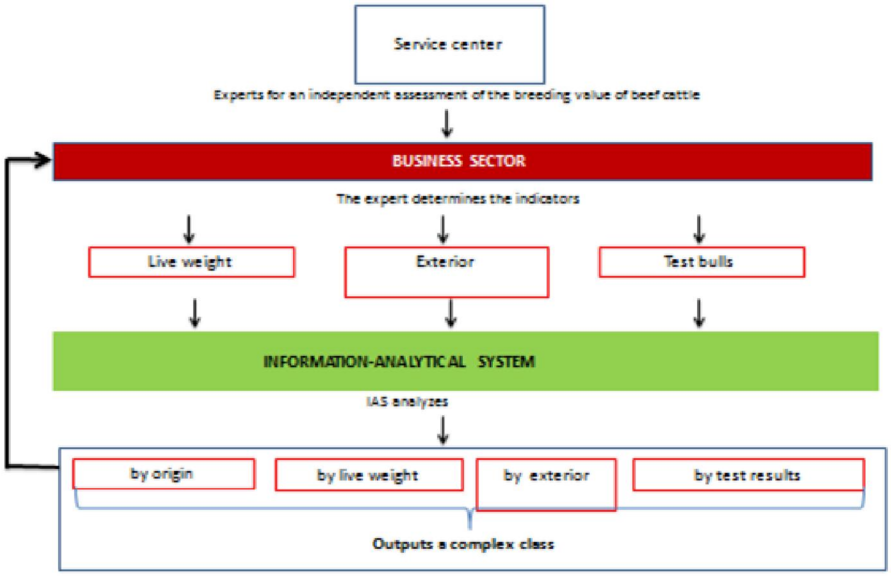
SOME ASPECTS OF SELECTION-BREEDING WORK IN MEAT CATTLE BREEDING

Abstract. In this article highlights the main aspects of selection and breeding work used in the specialized meat cattle breeding of the Republic at the present time. The need to preserve and develop the genetic diversity of livestock herds of beef breeds was noted, while preference should be given to cattle of domestic selection. Import should be carried out under obligatory scientific support and in pre-prepared farms. To increase the reliability of the origin of breeding animals, DNA testing should be widely implemented and the IAS database used.

Key words: specialized meat cattle breeding, genetics, selection, breeding, breeding work, productivity.

The increase in productivity, improvement of produced products quality is primarily due to the level of selection and breeding work carried out in beef cattle breeding, in which the system of assessing the breeding value of bred animals plays an important role. Until recently, the system of assessing the breeding value of specialized beef cattle has been applied in the post-Soviet states, based on materials obtained as a result of annual bonitation of breeding herds with considering of age and gender groups [1]. The main characteristics to be considered in bonitation of beef cattle are: the rate of growth of young animals and the cost of feed per 1 kg of growth in live weight; live weight of animals by age; milkiness of cows (according to the live weight of young animals at 6 months of age); point scoring the constitution and exterior; degree of manifestation of the genotype and severity pedigree accessory [2]. Bonitation is conducted with the participation of farm specialists, which does not fully ensure the reliability of the data obtained. To exclude subjectivity in the evaluation of breeding value to the practice of beef cattle breeding is recommended to enroot service centers on the submission of experts for the independent removal of the phenotypic indicators of the estimated livestock of breeding beef cattle with the entry of data into the database of the information and analytical system (IAS) (Picture1). Using of service centers and independent experts will allow to reliably and objectively evaluate the breeding quality of animals, which will determine the prerequisites for more careful selection of beef cattle for reproduction and further breeding.

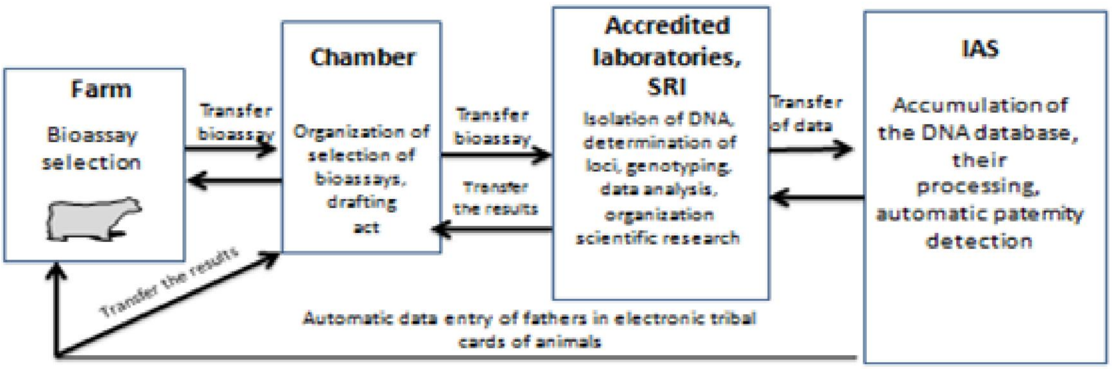
By completion of the integrated assessment of the breeding value of beef cattle, the received materials have a comprehensive analysis based on which the herd selection is planned (sample and pair selection, implementation of custom pairings, introduction of changes and additions to the perspective breeding plans, gathering of herds at the expense of their own repair youngsters, implementation of breeding procurement, etc.), as well as technological, feeding and veterinary activities. In practice, the leading world producers of breeding beef cattle in recent years widely used the method of index rating of breeding value. In our republic, prerequisites are also being created for the transition to this method: methodical approaches have been developed, and information and analytical system (IAS) with a data bank on breeding and productive characteristics of animals has been established and functioning [3,4]. However, as practice has shown, the reliability of the indicators entered in the database IAS was very low, due to lack of mechanism to ensure effective control over their receipt. In addition, the insufficient level of feeding of breeding animals in most farms does not allow them to fully disclose their genetically determined productive qualities.



Picture 1 - Organization of the assessment of breeding value of beef cattle

The established practice of herd reproduction in beef cattle, including breeding herds, the method of natural fertilization is used mainly: rarely manual and, more often, freestyle mating. This fact significantly reduces the effectiveness of breeding, and therefore the conduct of a genetic examination confirming the origin of breeding animals on the paternal line is considered an integral element of the organization of reliable pedigree accounting in meat cattle breeding. However, in the current situation index valuation of pedigree value is seen as premature and possible only after solving the problems of a full fodder base, and implementation of origin validation of genetic methods of breeding animals.

To ensure reliable data on the origin of pedigree beef cattle, in the pedigree chambers, according to existing methods, organize the selection of bioassay from the farms with the compilation of the necessary accompanying documents (Picture 2) and transfer the bioassay to accredited laboratories where the alleles of animals are determined at 12 loci, and the results are recorded to the IAS database, for processing and automatic origin determination.



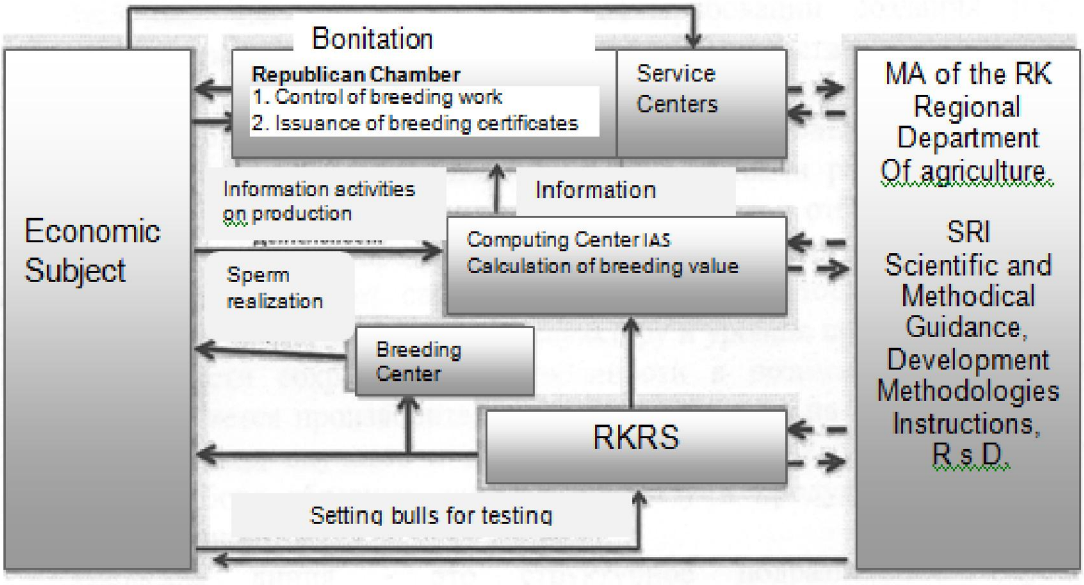
Picture 2 - Determination of the authenticity of the origin of animal DNA by the method

Genetic studies to confirm the authenticity of origin should first of all be carried out in groups of pedigree animals that are part of the compulsory material presented during the approbation of new breeding achievements (plant lines, breeds and types). Then, step by step, genetic studies should cover: a bull-producing group of cows entering the breeding core and accounting for 18-20% of the total breeding stock; bulls-producers working in the breeding herd, being tested for their own productivity and evaluated for the quality of offspring; breeding core, which is 50-60% of the total number of cows; heifers after chipping and rearing, intended for the repair of the selection group, the breeding core and intended for breeding.

To ensure quality and smooth operation to determine authenticity of origin, it is necessary to fulfill the following conditions: to scientific-research institutions of the agro-industrial complex of the RK to work out unified domestic method for determining genetic tests for farm animals; to approve the mechanism for determining the origin of animal meat breeds by examining samples of genetic material at the legislative level.

Organization of breeding work in beef cattle as a whole should be a set of measures to improve the genetic potential of beef cattle, to obtain the maximum number of offspring, and high-quality beef, providing the maximum economic benefit.

In the process of selection and breeding beef cattle in the following units are involved, which require functional merge into a single system (Picture 3).



Picture 3 - Recommended scheme for managing breeding work in beef cattle breeding

Chambers and service centers provide selection and appointment of qualified boniters to the farms, organization of checks of the reliability of the results obtained in the process of bonitization, regularity of receipt and control over the introduction of current zootechnical events into the IAS database (calving, maternal padding, live weight indicators, etc.).

It is recommended to place the information and analytical system either under the Ministry of Agriculture of the Republic of Kazakhstan or at the lead scientific research institute, as in the first case, the administrative resource will be used (the MA is the customer of all livestock research) and the regulated legislative base, in the second case the primary basis of all livestock research will be provided, which is due to the fact that the primary function of IAS is to collect of reliable information and its primary analysis. Institutes further provide ready information on valuation of breeding value to chambers and business entities in the field of breeding livestock (farms, LTD, LPF, etc.). Experts' farms in turn formulate their proposals on ways to improve breeding bred breeding herds and sent to the chamber, which through SRI further provide scientific support for the work to solve the tasks.

It is known that one of the basic requirements for the creation of farm animals breeds and their improvement is the formation of an intra-breed structure. Possessing a certain monolithicity, any breed should be differentiated into separate structural elements with specific properties of development of a