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THE SPECIFICS OF BREEDING WORK IN DAIRY CATTLE OF THE SOUTHERN REGION OF UKRAINE

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Abstract. Generalized directions of breeding work in dairy cattle breeding agricultural enterprises of the southern Ukraine for the last 20 years and given the scientific-practical recommendations on improvement of breeding and productive qualities of animals through the use of the gene pool of domestic and foreign dairy breeds. Along with the preservation of the gene pool of red steppe breed by creating closed populations with the required number of effective sires and females, it is important to include them in breeding programs of creation of intensive types and breeds of dairy cattle, which meet modern requirements in terms of level and degree of realization of the genetic potential of dairy efficiency. Therefore, along with purebred breeding red steppe breed in the past decades it was improved by crossing with the bull related breeds – Anglia and red Danish, and thus derived ginamalone Ukrainian red dairy breed.

Key words: southern region of Ukraine, dairy cattle, breed, population, types, breeding, methods of breeding.

The use of native animal breeds in organic farming is justified and brings numerous benefits for growers. As noted by Szulc (2011) and Pilarczyk et al. (2015), such breeds are perfectly adapted to local environmental conditions, which are often harsh; in addition, they can be maintained with poor pasture resources based on sustainable grassland areas with high landscape values, they can supply products of unique quality (Chabuz et al. 2012; Litvinenko et al. 2016). Their use can also significantly reduce the cost of organic production. Furthermore, native breeds are a source of unique genetic combinations (Litvinenko et al. 2012).

In the South-Eastern region of Ukraine are traditionally the most common is the red steppe breed of cattle (Melnik 2002; Burkat 2003; Kruglyak 2007, 2014; Prong 2010). This breed has a long history as it dates back to the XVIII century, when settlers from Germany and Holland brought the cattle of red and red-white breeds, the roots of which are preserved in Germany, Switzerland, Denmark, France and Holland present. At the end of the XIX century the breed started to the blood rush Anglia and Dutch breeds.

Of the total number of local breeds of cattle, bred in the Ukraine, on the verge of extinction, unfortunately, is and red steppe, which was most common in the southern region of Ukraine (Polupan 2011; Ruban 2011; Danylenko 2012; Kovalenko 2013; Pochukalin 2014). According to Szulc (2011), 62 breeds of animals became extinct

worldwide between 2005 and 2010, and a very large number of breeds are at risk of extinction. This is the result of globalisation, which intensified in the 1990s and led to a significant reduction in breeds used in breeding. Industrial production methods pose the greatest threat to the genetic diversity of livestock (Carpino et al. 2004; Lithuania 2016).

Productivity of red steppe breed in the total mass remains low, but in the best breeding farms of Ukraine, with good conditions of feeding and keeping, the milk yield of Mature cows constitute more than 5 thousand kg of milk per lactation. As Szulc (2011) notes, the use of high-production breeds is unprofitable in areas favouring small farms, i.e. where natural conditions are not conducive to intensive agricultural production, as they will not achieve maximum production.

The most valuable qualities of red steppe breed is a strong type of Constitution, combined with endurance and exceptional adaptability to the dry hot climate of the southern steppe zone of Ukraine. The live weight of Mature cows average 450 kg, cows-heifers – 380 lbs. Under optimum conditions of feeding and keeping the cows up to 5 years of age live weight of 500 kg or more breeding bulls about 1,000 kg and at slaughter steers at 18 months of age carcass yield reaches 56–57%.

The genealogical structure of red steppe breed include: separase, Donetsk, Crimean and Dnipropetrovsk unotron types and 34 lines.

Along with the preservation of the gene pool of red steppe breed is important, its inclusion in breeding programs of creation of intensive types and breeds of dairy cattle.

Therefore, along with purebred breeding red steppe breed in the last decades, it should be improved by crossing with the bull related breeds – Anglia and red Danish.

The use of named species, due to the desire not only to preserve valuable qualities of red steppe breed, but also to create new types of rocks that have a high fatty-milk and high suitability for machine milking (Kruglyak 2007).

The most effective approach for protecting endangered populations is through the use of programmes for the protection of genetic resources of certain animal breeds. The primary aim of such programmes should be to preserve the characteristics of protected populations. Purposeful breeding work conducted by the scientific staff of the Institute of animal steppe regions of NAAS, Institute of animal breeding and genetics NAAS, Institute of animal husbandry in Central areas NAAN was completed breeding innovacionnogo of Ukrainian red dairy breed created by cross breeding red steppe breed of cattle with Anglia and red Danish breeds (Kruglyak 2007; Ruban 2011; Kozlovsky 2012).

Animals of this type have a wide and deep chest, smooth topline, improved forms of the udder. The average protein content in milk at the level of 3.40%, the intensity of milk output of 1.6–1.9 kg per minute.

Together with the creation of innovacionnogo type, since the 80-ies of the last century by cross breeding the gene pool is heavily involved Holstein red-and-white suit. Long selection work resulted in breeding holstenterme unotron type. After testing the two types have been declared the prospect of consolidation of the newly created types in a single, genealogical and phenotypic strukturyzowane red dairy breed, which in the future should take the leading in number of livestock in dairy cattle of the southern and Eastern regions of Ukraine.

In Poland, the most common active breeds of dairy cattle are the black and white Polish Holstein-Friesian breed (88.64%), the red-white Polish Holstein-Friesian (3.09%) and Simental (1.49%), as well as mixed breeds (10%) and hybrids (4.84%). The remaining breeds make up 1.95%, most of which are covered by genetic resource protection programs: Polish Red, Polish Black-white, Polish Red-white and White-backs (Martyniuk 2013).

Golestani type of the Ukrainian red dairy breed has a high growth rate, milk type exterior, the best development for most of the measurements while reducing the proportions of the body in the direction of high performance, musicagratis and significant reduction of the body. Average yields for 313 days of the first lactation 1969 presented to the approbation of cows amounted to 5137 kg of milk, in 305 days – 5033 kg with a milk fat content of 3.87%, while its output 194.5 kg. Corresponding figures the best lactations are for 319 days 6150 kg in 305 days – 6034 kg 3.840% 231.9 kg of fat.

Animals holstentherme type are characterized by a sufficiently high heat resistance, which has allowed the realization of high genetic potential productivity. The firstborn of this type are improved udder shape and significantly high (compared with red steppe, red Danish, Anglia breeds and their hybrids) intensity of milk output, which at various farms on average is 1.65–1.86 kg milk per minute.

The genealogical structure of the type includes proven factory lines Rela 4939, Kevel 1620273, Nhance 343514 and Geneva 1629391; 17 family groups and 25 approved factory families.

Breeding programs are provided as purebred breeding within the inbreeding of types, the combination of their genetic material with the prevailing perspective Holstentor type. Animals innovacionnogo type can be diluted in an unstable forage base, and holstentherme – while ensuring a high level of herd breeding and feeding of cattle.

When using cows bred types should consider the predominant use of holstentherme for the production of milk in conditions of industrial technologies, to improve the exterior and productive qualities of animals innovacionnogo type. The use of manufacturers innovacionnogo type and source rocks (red steppe, red Danish, angrily) for backcross breeding stock holstentherme type is inappropriate.

When considering the future use of "holstenschus" of dairy cattle in the South of Ukraine by a number of scholars (Kruglyak 2007, 2014; Barabash 2008; Costas et al. 2010; Bratushka 2013) made the following conclusions:

1. Intensive use golshinsky producers for breeding stock of the major dairy breeds has led to a dramatic change in the type tasked livestock from meat and milk specialized milk type.
2. Significantly improved the temperament of dairy cows morpho-functional characteristics of the udder, the suitability to machine milking and loose housing krupnooptovom content.
3. Dramatically increased the genetic potential of milk production of record cows in the breeding herds, which gives the possibility to increase the selection differential for the selection of repair sires.
4. Mastered the techniques of modern biotechnology breeding of valuable genotypes (embryo transfer, etc.).
5. Established breeding plants and reproducers "visokogradnya" and Holstein cows.

6. Conducted testing of two new specialized dairy breeds of Ukraine based on the use of black-and-white and red-white and Holstein cows.
7. Were negative effects of the use of semen golshtinsky manufacturers under the defective feeding of cows, resulting in sharply reduced their milk production and diminished reproductive ability of breeding stock.

The continued genetic improvement of dairy cattle has led to high milk yields, but has resulted in a deterioration in animal health and longevity (Freyer et al. 2008). Breeding work carried out in populations of the most popular breed of dairy cattle (Holstein-Friesian) has further exacerbated the level of inbreeding. This results in inbreeding depression, which worsens production (Gołębiewski et al. 2015).

From the above it is recommended that in commercial farms go to breeding "in itself" of different local galstiyana genotypes, but according to the modified method which eliminates the possibility of using the semen of the local producers, obtained from breeding "in itself" crossbred parents.

Assumes the use of purebred bulls-improvers Holsteins valuable high-yielding cows of native breeds – ementalaki, black - spotted and red of steppe. "Half-breed" cows it is recommended that manufacturers use 3/4 of heredity derived from purebred and Holstein cows, that is, to carry out the custom of mating with native high-performance cows. Breeding farms must specialize in the breeding of hybrids – "half-breeds". The proposed scheme for breeding in commercial farms Holstein livestock gives you the opportunity to save the best purebred gene pool of domestic breeds, to ensure the use of best breeds foreign breeds and intensive use of modern selection achievements.

It is established that genetic changes in animal populations due to stabilizing selection, primarily associated with the elimination of certain blood group alleles, which are rare. That is, under its action, the reduced frequency of extreme variants in a population, increases homozygotes. Analysis of phenotypes with high frequency of alleles shows that they are the individual modal class closest to the average for the population, that is, they are the most typical and can be used as a storage base allele population the most common alleles. Elimination of rare alleles that occurs when stableway selection, not associated with a decrease in the adaptive norm of individuals modal classes, and for several generations of closed breeding, the advantage of the modal grades for their adaptation becomes maximum.

Studies of the genetic structure of blood groups showed that extreme classes in the distribution are much more different from average lines (Kovalenko et al. 2013).

Considering the influence of natural selection on genotype structure of the population it should be recognized that it is virtually impossible to eliminate. But to diminish its effects is possible through the creation of optimal conditions of feeding and housing. An important contribution to the study of the action of natural selection in herds of dairy cattle did Russian scientists (Zubec 2010; Costash et al. 2010; Ruban 2011). They studied the adaptive functions of animal's organism and external environment influence the formation of milk productivity.

Milk production efficiency has been steadily increased though improved nutrition, rapid genetic progress and improved breeding conditions (Komisarek and Dorynek 2002; Kowalski et al. 2003; Andersen et al. 2005).

Recent studies indicate that the greatest pressure of natural selection observed in the early stages of post-embryonic development – the first lactation and gradually decreases to the third lactation. Under the action of natural selection out of the herd, mostly heifers – daughters of the most high-yielding mothers to keep them focused breeding (artificial selection) for milk production. In the harsh conditions of loose housing of cattle the pressure of natural selection was twice more than in more comfortable conditions tethered content, which testifies to the imperfection of technological solutions in dairy complexes.

Reducing the pressure of natural selection also balances the action of the mutation process, which is completely impossible to eliminate. The effect of genetic drift can be reduced by maintaining populations in accordance with the required strength.

In the formation of gene pool herds should consider the signs that control the viability of populations, such as fat content in milk, live weight at birth, 6-, 10-, 12- and 18 months at first insemination, milk yield of cows by lactation periods, reproductive ability, exterior, interior and constitutional features, immunogenetic indicators.

The selection of animals should be close to the average productivity of the breed and to promote the dissemination of heterozygosity and prevent genetic drift, which contribute to the homozygosity of the population. The main selection criteria should be: health, strong Constitution, and reproductive quality.

In accordance with the Law of Ukraine "About breeding case in animal husbandry" (The law of Ukraine), when roselabs programs the conservation and utilization of gene pool in dairy farming should comply with its requirements. Crossbreeding can result in the appearance of economically beneficial characteristics derived from parental breeds in the phenotype of the offspring. It should be remembered that before deciding to cross, it is necessary to identify the expected effects of heterosis (Gołębiewski et al. 2015).

Such requirements are developed by the breeding programmes for the agricultural companies of the southern region of Ukraine with the use of stabilizing selection study of optimum crownest for improving the breeds, genetics and breeding monitoring vnetropicheskikh processes in herds of dairy cattle.

Further significant breeding and productive improvement of dairy cattle in the specified natural-geographic zone of Ukraine is possible when long-term breeding programs with the use of modern biotechnological methods of work and international experience.

CONCLUSIONS

Along with the preservation of the gene pool of red steppe breed by creating closed populations with the required number of effective sires and females, it is important to include them in breeding programs of creation of intensive types and breeds of dairy cattle, which meet modern requirements in terms of level and degree of realization of the genetic potential of dairy efficiency. Therefore, along with purebred breeding red steppe breed in the past decades it was improved by crossing with the bull related breeds – Anglia and red Danish, and thus derived ginamalone Ukrainian red dairy breed.

In the end, it should be noted that farms in the southern region of Ukraine with the aim of substantial improvement of breeding and productive qualities of dairy cattle it is necessary to conduct breeding "in itself" Holstentor crossbred genotypes, but according to the modified method which eliminates the possibility of using crossbred sires, obtained from breeding "in itself" crossbred parents.

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