INFLUENCE OF GENETIC FACTORS ON INDICATORS LIFETIME PRODUCTIVITY OF DAIRY CATTLE

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Researches results of cows of the Ukrainian Red-and-White lifetime productivity dairy breed on traits of duration of economic use within the limits of an estimation of crossbred genotypes and genealogical formations are resulted. Reliable influence of the conditional share of Holstein breed heredity on the economic use duration and lifetime milk productivity of cows has been established. For the longest time in the herd, crossbred cows with Holstein bloodline of 25.0 % and crossbreeds with heredity of the parent breed up to 50.0 % were used. At the final stage of crossing in animals with blood ratio of 62.5-87.5 %, a noticeable reduction in the duration of economic use was observed. Animals with Holstein bloodlines of 75.0 and 87.5% were inferior to groups of crossbred cows with heredity of 25.0 and 50.0% with reliable difference of 590 and 633 (P<0.001), 432 and 475 (P<0.001) days, respectively.

At the same time, from cows with a share of Holstein blood of 87.5 %, the highest lifetime milk yield was obtained with an excess of cows groups of other genotypes by 1250-3260 kg of milk with reliable difference compared to crossbred genotypes with bloodness - 25.0 % (P<0.001), 37.5 (P<0.001), 50.0 (P<0.01) and 62.5 % (P<0.05). The hereditary influence of lines on the indicators of lifetime productivity in intralinear selection and in some variants of interlinear combinations was proved. The influence of genealogical formations on longevity indicators in in-line selection was evidenced by reliable difference between the extreme variants of the assessed lines on the basis of economic use (651 days; P <0.001) and lifetime milk yield (14267 kg; P <0.001). According to the results of interline selection in different variants of paternal and maternal lines combinations, significant variability of the offspring obtained from these variants was established, according to the estimated traits of duration of use and lifetime milk production. Cows obtained in all variants of interlinear selection of parental lines Enhancer, Hannover and Valiant with sires of maternal line S. Cavalier have always had high indicators of duration of economic use and lifetime milk productivity.

Key words: Ukrainian Red-and-White, breed, cow, milk yield, line, lifetime productivity.

At the present stage of dairy cattle selection, the duration of productive use of animals was directly related to the biologically possible longevity of each animal. Physiologically, under the condition of rational methods of keeping and proper feeding, cows are able to maintain a high level of productivity and reproductive ability up to 10–12 years of age.

The relevance of the issue regarding the productive longevity of cows of Ukrainian dairy breeds is now aggravated through the use, with further improvement of sires of the Holstein breed, since, as the practice of most countries in the world and domestic researchers testify, the use of the Holstein gene pool is accompanied by an increase in the exactingness of their high-blooded offspring in terms of feeding and keeping and, as a result, a decrease in the indicators of economically useful traits, including productive use [3, 7].

The duration of productive use of dairy cattle, as a breeding trait, significantly affected the economic development of the industry [24]. Currently, the issue of longevity is a strategic issue. This was evidenced by numerous world studies. Traits of longevity of dairy cows are among the leading selection criteria, as they determine the profitability of the dairy industry [17, 18, 21]. Productive longevity of dairy cows was a complex integrated trait that depended on a number of genetic factors.

However, it was impossible to obtain a selection effect in a short period of time by the method of direct selection on the basis of longevity in dairy animals due to their low heredity. According to foreign researchers, longe-
vity varied from 0.03 to 0.07 [15, 16, 19, 22, 27].

Present moment, the heredity of cows of all created Ukrainian breeds of dairy cattle containing in its genotype many variants of conditional blood of the Holstein breed due to the widespread use over the past 30-40 years of pedigree sires of the North American and European selection. This was especially true of the Ukrainian Red-and-White dairy breed, as it was the first approved as selection achievement in 1993.

According to domestic researchers, indicators of the duration of cows productive use are determined by the genotype of animals, in particular their belonging to the breed and line, as well as depending on the share of heredity of Holstein breed [3, 4, 11, 12, 13, 14].

Further selection of the Ukrainian Red-and-White dairy breed, using animals of different genotypes in this process, required research to determine the dependence of lifetime traits on all possible genotypic factors, including the share of conditional bloodness of the improving breed and origin. In this regard, the aim of this study was to examine the duration of productive use and lifetime productivity in Holsteinized cows of different bloodlines and to identify hereditary factors that affected their longevity.

Materials and methods. The experimental basis of conducted research was the selection information of the pedigree farm "Piskivske" Bakhmatsky district of Chernihiv region. A retrospective assessment of cows of the Ukrainian Red-and-White dairy breed according to the traits of milk productivity within the genotypes and genealogical formations for recorded lactations was carried out by the indicators of the database of automated breeding records of the economy.

Within the genotypes, six groups of crossbred animals were formed, taking into account the conditional Holstein bloodlines: I group 1/4-blooded; II group - 3/8; III - 1/2; IV - 5/8; V - 3/4 and VI - 7/8-blooded. Biometric processing of the research results conducted according to the methods of E.K. Merkurieva [6] on a PC using software.

Research results. The herd of the pedigree farm PAE "Piskivske" was created according to the generally accepted scheme of reproductive crossing of aboriginal Simmental breed with sires of Holstein Red-and-White suit. The use of crossbred sires of the Holstein breed and purebred Simmental sires at different stages of crossing added to the significant diversity of the genotypic composition of the breeding stock of animals.

Analyzing groups of crossbred cows of different genotypes by the economic use duration and number of lactations, it could be argued that conditional share of Holstein breed heredity naturally influenced these traits. This conclusion was confirmed by comparative analysis of the results of studies given in Table 1, showing that with the growth of the conditional proportion of bloodness in the crossbreeds of improving breed, period of their economic use decreased accordingly.

The longest used in the herd were crossbred cows with Holstein bloodline of 25.0 %, obtained at the first stage of creating the breed because of backcrossing, and crossbreeds with the heredity of the parent breed up to 50.0 %. Subsequently, at the final stage of crossing, in animals of the final genotypes with blood ratio of 62.5–87.5 %, a noticeable reduction in the duration of economic use was observed. Thus, high-blooded animals with conditional Holstein blood ratio of 75.0 and 87.5% were inferior to groups of crossbred cows with a heredity of 25.0 and 50.0 % with reliable difference by 590 and 633 (P<0.001) and 432 and 475 (P<0.001) days, respectively.

Comparison of the number of lactations used more clearly testified to the dependence of their value on the share of heredity of improving breed. If we conditionally divide the six most common crossbred genotypes of animals that we evaluate into two groups, then we get one with a low share of Holstein heredity – 1/4; 3/8 and 1/2, another high – 5/8; 3/4 and 7/8.

Then already among the first group of low-blooded cows, the reliable difference was found in comparison between animals with one-fourth of the blood and crossbreeds with 3/8 and 1/2 parts, which was 0.4 (P<0.05) and 0.5 (P<0.001) lactations, respectively. With an increase in the conditional share of the improving breed by 12.5 %, the duration of lactation use decreased in an arbitrary distribution between genotypes by 0.1–0.8 lactations. The two groups of cows with the highest Holstein blood, 75.0 and 87.5 %, reduced their productive use to 3.3 and 3.2 lactations. The difference between...
Table 1. Lifetime productivity and duration of use of cows of different genotypes of Ukrainian Red-and-White dairy breed

<table>
<thead>
<tr>
<th>Genotype (conditional bloodness for Holtein)</th>
<th>n</th>
<th>Duration of use</th>
<th>Lifetime productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>economic, days</td>
<td>Milk yield, kg</td>
</tr>
<tr>
<td></td>
<td></td>
<td>lactations</td>
<td>% of fat</td>
</tr>
<tr>
<td>1/4 (25.0 %)</td>
<td>13</td>
<td>2664±80,2</td>
<td>25574±842,1</td>
</tr>
<tr>
<td>3/8 (37.5 %)</td>
<td>11</td>
<td>2506±92,1</td>
<td>25310±997,3</td>
</tr>
<tr>
<td>1/2 (50.0 %)</td>
<td>17</td>
<td>2460±75,3</td>
<td>26322±768,2</td>
</tr>
<tr>
<td>5/8 (62.5 %)</td>
<td>16</td>
<td>2376±71,0</td>
<td>27086±804,4</td>
</tr>
<tr>
<td>3/4 (75.0 %)</td>
<td>19</td>
<td>2074±68,3</td>
<td>27584±677,6</td>
</tr>
<tr>
<td>7/8 (87.5 %)</td>
<td>28</td>
<td>2031±62,5</td>
<td>28434±532,2</td>
</tr>
</tbody>
</table>

Crossbreed genotypes with blood 5/8 and 3.4 was the highest (0.8 lactations) and highly reliable at P <0.001 (td = 4.91). The economic importance of indicators for evaluating animals in terms of lifetime productivity eventually moved to the rank of traits for determining breeding value, therefore, in some countries of Europe and North America, the duration of cows economic use was included as a selection trait in the cattle breeding system [20, 23, 25, 26], since the reduction in the productive longevity of cows had a negative effect on the efficiency of selection due to the slowdown in the rate of herd reproduction and intensity of selection in it.

Evaluating the lifetime productivity of cows of experimental genotypes by the amount of milk yield, a general conclusion can be drawn, that indicate on the existence of a curvilinear relationship between the conditional bloodness by the improving breed and milk yield for productive life. It consisted in the fact that if at the first stages of crossing with absorption of the aboriginal blood by Holstein breed in 3/8-blooded crossbreeds, the lifetime milk yield decreased, then at the final stage, due to the growing of genetic potential in high-blooded genotypes, the increase in the heredity of the Holstein breed did not cause them a decrease in lifetime milk yield. On the contrary, from the group of cows with a conditional proportion of 7/8 Holstein blood, the highest lifetime milk yield was obtained with an excess groups of cows of other genotypes by 1250-3260 kg of milk with reliable difference compared to crossbreed genotypes 1/4 (P<0.001), 3/8 (P<0.001), 1/2 (P<0.01) and 5/8 (P<0.05).

The milk fat content of crossbreed cows of different genotypes, with a change in the shares of heredity of the original Simmental and Holstein breeds, experienced some influence of improving breed. Between the fat content in the milk of cows with Holstein heredity of 25 % and high-blooded animals (87.5 %), an insignificant but reliable difference was established - 0.05 % (P<0.01).

A slight decrease in milk fat content in high-blooded cows was compensated by higher rates of milk fat yield, although the existing difference of 30-111 kg in favor of 7/8-blooded crossbreeds was not reliable.

As a certain integrated indicator that best characterized the genetic potential of animals, regardless of economic use and lifetime productivity, there was milk yield of cows for one day of their life. In our studies, cows with Holstein heredity of 87.5 % differed from other animals of crossbreed genotypes by the highest milk yield per day of life, which was 14 kg of milk. Their excess on this trait was reliably confirmed in all comparisons and ranged from 0.7 kg (P<0.05) compared to three-quarter-blooded animals, and to 4.4 kg (P<0.001) for one-quarter-blooded...
crossbreeds.

Good conformation-constitutional development and strength of the animal, the functioning of all its organs and systems of vital activity will be prerequisite for the corresponding intravital and lifetime productivity of animals. Lifetime productivity and longevity, along with the impact on economic performance, are closely related to the selection process, since for both production and livestock breeding, animals that successfully combine these two traits are most valuable. The high lifelong productivity of cows reflected the breeding value, and with long-term economic use, more descendants were obtained from them, thereby increasing the proportion of animals with valuable genotypes in the herd. From the foregoing, the rationale for research will be motivated in the aspect of the influence of change in the conditional proportion of Holstein thorough-bredness on the duration of the economic use of highly productive cows.

Analysis of indicators of the duration of use and traits of milk productivity of high-yielding cows for higher lactation, which are given in Table 2, in some way confirmed the justification for the positive impact of the body vital activity of highly productive animals on the extension of their productive use. For the longest time, low-blooded animals (5.1 lactations) obtained from backcrossing with a Holstein inheritance of 25.0 % were used, exceeding the average use of a group of homogenous cows by 0.3 lactations (see Table 1). High-blooded crossbreeds with Holstein heredity of 87.5 % used 3.9 lactations, which was reliably higher than in monogenous animals by 0.7 lactations (P <0.001). Groups of crossbreed genotypes with conditional blood from 37.5 to 75.0 % with increasing average productivity for higher lactation from 5,335 to 6,758 kg of milk did not differ by number of calving and were used during 4.3-4.4 lactations.

According to the milk yield for one day of life, high-yield cows with Holstein heredity of 87.5 % exceeded, with a highly reliable difference at P<0.001, hybrid genotypes with conditional bloodness from 25.0 to 62.5 % per 1.9-4.8 kg of milk.

Thus, summing up the research findings of the relationship between the share of conditionally valuable qualities of other animals. At the same time, valuable properties were transformed into a rational Holstein heredity and traits of lifetime productivity, we can conclude that a further increase in the inheritance of the Holstein breed in the array of Ukrainian Red-and-White dairy will be accompanied by decrease in the duration of use of cows. In this regard, it was possible to recommend farms to use at this stage of breeding the sires of Ukrainian selection, that is, crossbreeds of the Holstein breed, with correspondingly high pedigree value, preferably evaluated according to the conformation type of their daughters.

However, in the absence of domestic breeding of sires, the prospect of further use of the gene pool of the Holstein breed of foreign selection will require the creation of conditions on farms that would contribute to the maximum realization of the genetic potential of high-blooded genotypes, which in turn, if not stop the reduction in the duration of the productive use of cows, then somewhat slow down this process.

The scientific literature has repeatedly reported on the effectiveness of both intra-line breeding and cross-lines. The long-term practice of livestock science testified about the selection benefits within the line breeding. Structuring the breed into separate lines that differ in the development of economically useful traits, that is, they are hereditarily controlled by different genotypes, respectively, will make it possible to create within them animals with a sufficiently high hereditary resistance.

Due to the abundance of genes that contributed to both the development of economically useful traits and the growth of homozygosity to stage that will not lead to inbreeding depression, while maintaining a sufficient level of variability in the breed [2].

In addition, with the improvement of breeds and types of dairy cattle, it is not possible to concentrate in one animal all the valuable qualities that characterize the breed. Therefore, during the selection process, various positive economically useful traits accumulated in individual lines, which form the structure of the breed, giving it the plasticity necessary for further improvement. In the process of its further development, the line, in addition to spreading the inheritance type traits of the ancestor, retained and combined with him the positive group of not one ancestor, but also the best dams with whom he mated. This process led to
the progress of the line, the main property of which was the ability in each subsequent generation to produce producers who, in their qualities, are not inferior to the ancestors.

Therefore, intraline breeding should ensure genetic progress, but with strict adherence to the system of selection, matching and evaluation of animals by pedigree value. It is believed that the effectiveness of linear breeding will depend on the number of generations of its successors and the presence of leader sire in it in order to ensure progressive development within four to six generations [1, 8].

On the other hand, there is a theoretical basis which indicated that the cross of genealogical formations, on the contrary, due to the growth of heterozygosity, will lead to an increase in the indicators of viability, reproduction and productivity in the offspring [5]. There are also separate scientific studies showing that not every interline selection will provide the best results [9, 10]. Therefore, in practical selection and breeding work with a herd, it will be necessary to look for successful interline combinations, since unsystematic crossing of lines did not always contribute to the consolidation of individual traits and, instead of the expected desired effect, led to a deterioration in performance indicators.

Taking into account the important selection aspect of intra- and inter-line breeding, it was considered appropriate to study the effectiveness of the combination of lines in the breeding of the Ukrainian Red-and-White dairy breed of the controlled herd on the basis of the duration of use and lifetime productivity (Table 3).

Summarizing the results of the evaluation

<table>
<thead>
<tr>
<th>Genotype (conditional blood-ness for Holstein)</th>
<th>n</th>
<th>Duration of use</th>
<th>milk yield, kg</th>
<th>% of fat</th>
<th>Kg of fat</th>
<th>Milk yield for one day of life, kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/4 (25,0%)</td>
<td>24</td>
<td>2798±76,8</td>
<td>5,1±0,21</td>
<td>3,82±0,021</td>
<td>202,4±3,51</td>
<td>17,4±0,32</td>
</tr>
<tr>
<td>3/8 (37,5%)</td>
<td>35</td>
<td>2516±78,5</td>
<td>4,4±0,19</td>
<td>3,79±0,022</td>
<td>202,2±4,01</td>
<td>17,5±0,43</td>
</tr>
<tr>
<td>1/2 (50,0%)</td>
<td>39</td>
<td>2465±84,6</td>
<td>4,3±0,15</td>
<td>3,80±0,021</td>
<td>224,0±3,98</td>
<td>19,3±0,25</td>
</tr>
<tr>
<td>5/8 (62,5%)</td>
<td>47</td>
<td>2506±80,1</td>
<td>4,4±0,12</td>
<td>3,81±0,020</td>
<td>236,9±4,12</td>
<td>20,3±0,27</td>
</tr>
<tr>
<td>3/4 (75,0%)</td>
<td>49</td>
<td>2457±74,5</td>
<td>4,3±0,11</td>
<td>3,78±0,022</td>
<td>249,3±3,65</td>
<td>21,6±0,30</td>
</tr>
<tr>
<td>7/8 (87,5%)</td>
<td>38</td>
<td>2304±88,4</td>
<td>3,9±0,09</td>
<td>3,79±0,023</td>
<td>256,1±2,97</td>
<td>22,2±0,28</td>
</tr>
</tbody>
</table>

of cow’s offspring obtained during the intraline selection of eight genealogical formations of the pedigree farm "Piskivske", the reliable effect of lines inheritance on lifetime productivity was established. In the rank of assessing the trait of economic use duration, the first position was taken by the cow’s offspring of the well-known genealogical line in the Holstein breed Reflection Sovereign 0198998. Which, in confirmation of its with reliable difference of 328-651 days (P<0.01-0.001), was superior to the progeny of other lines, with the exception of Stendout Cavaliyer and Hannover.

The genealogical formations of S. Cavaliyer 1620273 and Hannover 1629391 are pedigree lines in the Ukrainian Red-and-White dairy breed, the offspring of which took the second and third positions in the evaluation rating based on the duration of economic use, respectively.

Descendants of the R. Sovereign line also had the highest duration of lactation use (5.2) with exceeding the offspring of four lines Valiant, Pawnee Farm Arlinda Chief, Seiling Triune Rocket, Roseif Citation) by 1.1-1.8 lactations with a reliability at P < 0.01-0.001.

<table>
<thead>
<tr>
<th>Line</th>
<th>n</th>
<th>Duration of use</th>
<th>Productivity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Line 1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Line 3</td>
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<td></td>
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<tr>
<td>Line 4</td>
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<td>Line 5</td>
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<tr>
<td>Line 6</td>
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<td>Line 7</td>
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<tr>
<td>Line 8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Line 10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The most important of the traits that characterize lifetime productivity - milk yield of cows for life. On this basis, the emphasis in the ranking of the championship has shifted somewhat. The first position was occupied by cows belonging to the pedigree line of S. Cavalier with a lifetime milk yield of 31.821 kg, the second – by the descendants of the next breeding line of Enhancer (29.049 kg) and only the third was occupied by the offspring of genealogical line of Reflection Sovereign (28.860 kg). For lifetime milk yield, cows of the S. Cavalier purebred line with a reliable difference exceeded the offspring of all evaluated lines without exception with a difference from 2772 (P<0.05), compared with the descendants of the Enhancer line, to 14267 kg of milk (P<0.001) compared with the progeny of the R. Citation line.

The variability of fat content in milk of cows of the evaluated lines varied in the range of 3.77-3.83 %, but the interlinear difference was unreliable. By the lifetime yield of milk fat, the descendants of S. Cavalier's line were the best. At an average value of 1209.2 kg, they exceeded the cows of other genealogical formations with different levels of reliability, from 134.2 kg (P <0.05; Hannover line) to 536.9 kg (P <0.001; R. Citation line). The milk yield per day of life was also higher in the offspring of S. Cavalier's line sires and amounted to 12.1 kg. Reliable difference was found only in comparisons with animals of the P.F.A. Chief (2.5 kg; P <0.05), S.T. Rocket (2.5 kg; P <0.05) and R. Citation (4.11 kg; P <0.001). Analysis of interlinear selection (Table 4) in different variants of combinations of paternal and maternal lines showed significant variability of the offspring obtained from these variants of duration of use and lifetime milk productivity.

The use of breeding sires of the Enhancer purebred line proved to be more successful in combination with the cows of S. Cavalier and Hannover pedigree lines than with the cows of Valiant genealogical line. Due to longer use and high productivity, the lifetime milk yield of their offspring was higher compared to the descendants obtained from an unsuccessful combination of Enhancer’s sires of parent line with...
cows from bulls of the maternal Valiant line by 11.102 and 13.058 kg of milk (P<0.001), respectively.

From two variants of sires selection in the line of R. Citation with maternal S.T. Rocket and R. Sovereign, one was slightly better than the other with an advantage by lifetime milk yield of 1401 kg of milk, but the difference was unreliable. Analysis of variants of interlinear selection the offspring of R. Sovereign's paternal line with daughters of sires of maternal lines Hannover, Valiant, S.T. Rocket and P.F.A. Chief testified that the most effective was the combination of sires of the successors of the line R. Sovereign with cows of the line Hannover and S.T. Rocket. The offspring obtained from the cross of these lines, with almost the same duration of use, were significantly better in terms of lifetime productivity compared to the daughters of sires of the Valiant lines and, especially, P.F.A. Chief. The reliable difference in their favor for lifetime milking was 5,040 and 9,385 (P <0.001) and 3,479 (P <0.01) and 7,824 (P <0.001) kg of milk, respectively.

When using interlinear cross on the sires parent side of the Hannover pedigree
<table>
<thead>
<tr>
<th>Line of sire</th>
<th>Line of dam</th>
<th>Duration of use</th>
<th>Productivity</th>
<th>milk yield for one day of life, kg</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enhancer 343514</td>
<td>S. Cavalier</td>
<td>2602±60,1</td>
<td>31013±675,3</td>
<td>1175±23,7</td>
</tr>
<tr>
<td>Hannover</td>
<td></td>
<td>2548±89,5</td>
<td>32969±945,4</td>
<td>1246±33,1</td>
</tr>
<tr>
<td>Valiant</td>
<td></td>
<td>2030±84,6</td>
<td>19911±874,2</td>
<td>761±29,5</td>
</tr>
<tr>
<td>R. Citation 267150</td>
<td>S.T. Rocket</td>
<td>2449±92,2</td>
<td>20734±919,7</td>
<td>792±31,8</td>
</tr>
<tr>
<td>R. Sovereign 0198998</td>
<td>Hannover 28</td>
<td>2569±84,3</td>
<td>26134±843,5</td>
<td>834±32,3</td>
</tr>
<tr>
<td>R. Sovereign 0198998</td>
<td>Valiant 23</td>
<td>2244±88,3</td>
<td>21094±925,3</td>
<td>979±36,2</td>
</tr>
<tr>
<td>R. Sovereign 0198998</td>
<td>S.T. Rocket 36</td>
<td>2433±77,5</td>
<td>24573±975,4</td>
<td>929±28,7</td>
</tr>
<tr>
<td>Hannover 1629391</td>
<td>P.F.A. Chief 31</td>
<td>1994±62,8</td>
<td>16749±899,7</td>
<td>631±30,5</td>
</tr>
<tr>
<td>S. Cavalier 26</td>
<td></td>
<td>2772±98,3</td>
<td>31247±901,1</td>
<td>1184±33,6</td>
</tr>
<tr>
<td>R. Sovereign 24</td>
<td></td>
<td>2084±95,4</td>
<td>16589±814,8</td>
<td>634±34,7</td>
</tr>
<tr>
<td>Valiant 1650414</td>
<td>S.T. Rocket 18</td>
<td>2340±96,3</td>
<td>22464±971,8</td>
<td>847±40,5</td>
</tr>
<tr>
<td>Hannover 2552803</td>
<td></td>
<td>2031±84,1</td>
<td>15523±768,2</td>
<td>598±30,3</td>
</tr>
<tr>
<td>S. Cavalier 26</td>
<td></td>
<td>2796±82,7</td>
<td>32482±838,5</td>
<td>1238±32,8</td>
</tr>
<tr>
<td>R. Sovereign 48</td>
<td></td>
<td>2188±65,8</td>
<td>21005±703,6</td>
<td>794±24,5</td>
</tr>
<tr>
<td>Valiant</td>
<td>29</td>
<td>2194±85,9</td>
<td>3,6±0,43</td>
<td>20624±876,2</td>
</tr>
</tbody>
</table>
line, the combination with S. Cavaliera's purebred line was the most successful by the duration of use (2.772 days and 5.2 lactations) and traits of lifetime milk yield (31.247 kg) and milk fat (1.184 kg). The progeny from this combination exceeded with reliable difference the offspring from other crossed variants in terms of the duration of economic use by 551 days (P<0.001), by the number of lactations used by 1.5-2.4 (P<0.05-0.001), for lifetime milk yield by 13035-15.679 kg (P<0.001), milk fat by 490-592 kg (P<0.001) and milk yield in one day of life by 3.1-3.3 kg (P<0.001).

Comparing the offspring obtained in the variants of interline selection from the maternal side with the Valiant parent line, it should be noted that the highest indicators of lifetime milk production were obtained in selection with the S. Cavalier line (32.482 kg of milk and 1.238 kg of milk fat), and the lowest - from combinations with sires of the Hannover line (15.523 and 598 kg).

It is worth noting that cows obtained in all variants of interline selection of parent lines Enhancer, Hannover and Valiant with sires maternal S. Cavalier have always had high rates of duration of economic use and lifetime milk productivity.

Conclusions. The established reliable influence of the share of conditional bloodliness of the Holstein breed on the indicators of lifetime productivity of cows of crossbred genotypes indicated about the need for appropriate selection and economic measures to stop this process both at the genetic and paratype levels.

Reliable variability of lifetime productivity indicators under the influence of genealogical formations confirmed the expediency of linear breeding in selection and pedigree work both with this herd and with the breed as a whole. Favorable and unsuccessful combinations identified in individual variants of interline selection indicate the need for a systematic assessment in the pedigree herds when selecting sires of the corresponding genealogical formations. Re-applying the most effective options and abandoning the unsuccessful ones will help increase the genetic potential of dairy cattle productivity.

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Наведено результати досліджень корів української червоно-рябої молочної породи за ознаками тривалості господарського використання та довічної продуктивності у межах оцінки помісних генотипів та генеалогічних формувань. Встановлено достовірний вплив умової частки спадковості голштинської породи на тривалість терміну господарського використання та довічну молочну продуктивність корів. Найдовше у стаді використовувалися помісні корови з кровістю голштина 25,0% та помісні зі спадковістю батьківської породи до 50,0%. На заключному етапі схрещування, у тварин з кровістю 62,5-87,5%, спостерігалось відмінне скорочення тривалості господарського використання. Тварини з кровістю голштина 75,0 та 87,5% поступалися групам помісних корів зі спадковістю 25,0 та 50,0% з достовірною різницею відповідно на 590 і 633 (P<0,001) та 432 і 475 (P<0,001) днів. Разом з тим, від корів з частиною крові голштина 87,5% було отримано найвищий довічний надій з перевищенням груп корів з кровістю голштина на 1250-3260 кг молока з достовірною різницею у порівняннях з помісними генотипами з кровістю 25,0% (P<0,001), 37,5 (P<0,001), 50,0 (P<0,01) і 62,5% (P<0,05). Доведено спадковий вплив ліній на показники довічної продуктивності при внутрішньолінійному підборі та в окремих варіантах міжлінійних поєднань. Про вплив генеалогічних формувань на показники довголіття при внутрішньолінійному підборі свідчить достовірна різниця між крайніми варіантами оцінюваних ліній за ознаками господарського використання (651 день; P<0,001) та довічного надію (14267 кг; P<0,001). За результатами міжлінійного підбору у різних варіантах поєднань батьківських та материнських ліній встановлено істотну мінливість потомства, отриманого від цих варіантів, за оцінюваними ознаками тривалості використання та довічної молочної продуктивності. Корови отримані в усіх варіантах міжлінійного підбору батьківських ліній Інгансера, Хановера та Валіанта з бугаєм материнської Т. Кавалера завжди відрізнялися високими показниками тривалості господарського використання та довічної молочної продуктивності.

Ключові слова: українська червоно-ряба, порода, корова, надій, лінія, довічна продуктивність.