СЕКЦІЯ 7.
АГРАРНІ НАУКИ ТА ПРОДОВОЛЬСТВО

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MILK PRODUCTIVITY AND PHYSIOLOGICAL DEVELOPMENT OF COWS ACROSS DIFFERENT LACTATION PERIODS IN THE STEPPE ZONE

At the current stage of development of the agro-industrial complex of Ukraine, a strategic task is to increase the efficiency of dairy farming through a rational combination of the genetic potential of high-yielding global breeds with the adaptive properties of local livestock [1-3,9]. The creation and implementation of the Ukrainian Red Dairy breed, based on crossing Red Steppe and Holstein breeds, is the most scientifically sound way to intensify the industry [4-6].

For the steppe zone of Ukraine, particularly the Dnipropetrovsk region, the issue of combining high milk yields with heat resistance and the ability to effectively utilize the local fodder base is critical. The conditions of private farms often require animals to have not only high productivity but also a strong constitution and long-term economic use [6-8].

Researching the specifics of milk production technology under the conditions of the "Maksym B" farm is relevant, as it allows for the evaluation of the actual dynamics of milk productivity in crossbred cows across lactations and determines the degree of realization of their genetic potential compared to breed standards. The obtained data confirm the effectiveness of the chosen selection direction for ensuring stable production of high-quality raw milk under the conditions of fluctuating environmental factors.

The aim of the work is to analyze the milk productivity indicators and qualitative characteristics of milk from cows of local genotypes under the conditions of the "Maksym B" farm in the Dnipropetrovsk region. The study is aimed at examining the dynamics of milk yields, fat and protein content, as well as the live weight of animals across the first, second, and third lactations to evaluate the efficiency of using the genetic potential of cows in the steppe zone.

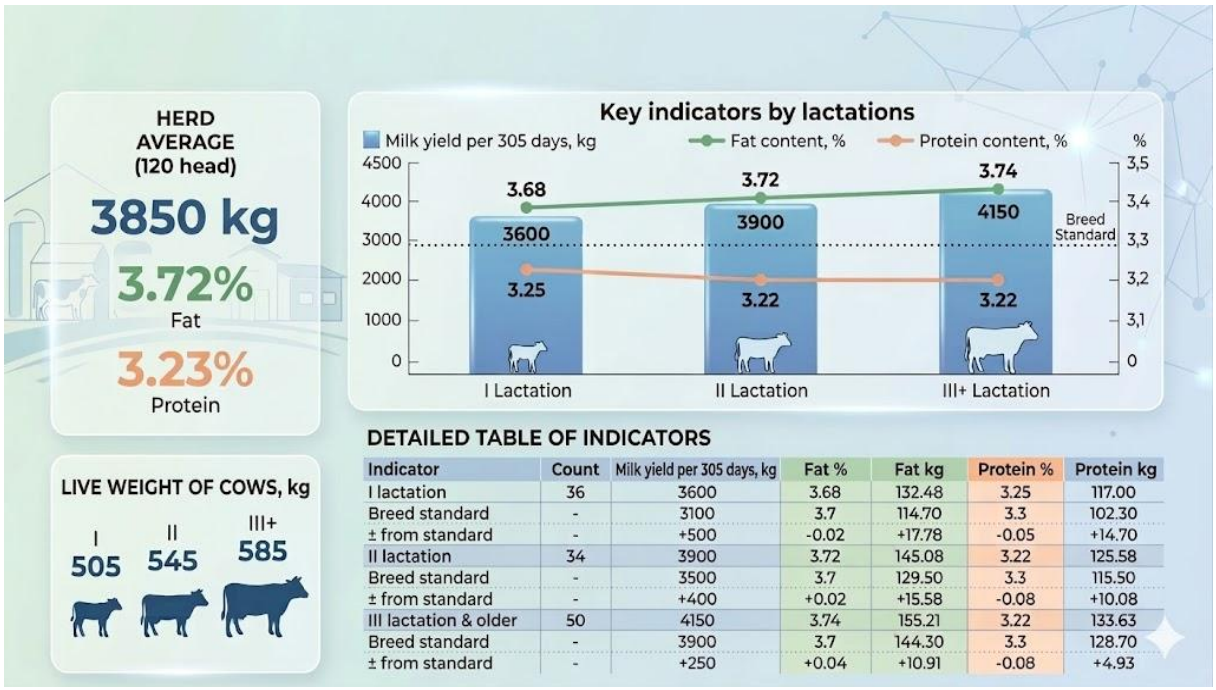
The study of the milk productivity of the Red Steppe herd under the conditions of the "Maksym B" farm showed a clear dependence of milk yield indicators and qualitative milk characteristics on the lactation order.

The average milk yield for 305 days across the herd was 3850 kg, with a fat content of 3.72% and a protein content of 3.23%. The gross yield of milk fat and protein was

143.22 kg and 124.36 kg, respectively, which generally corresponds to the standards of the Ukrainian Red Dairy breed and exceeds them in basic quantitative productivity indicators. The average live weight of the cows was 565 kg, indicating a sufficient level of development and creating the prerequisites for realizing their milk potential.

Analysis of cow productivity across lactations showed a clear trend towards an increase in milk yields and the gross yield of milk components as the lactation number increased. First-lactation cows had an average milk yield of 3600 kg over 305 days, which is 500 kg higher than the standard for the Ukrainian Red Dairy breed. The fat content in the milk was 3.68%, and the protein content was 3.25%, which generally met breed standards. Due to the higher yield, the gross yield of milk fat reached 132.48 kg, and milk protein reached 117.00 kg, which is 17.78 kg and 14.70 kg higher than the standard indicators, respectively. The live weight of first-lactation cows was 505 kg, which is typical for young animals and reflects incomplete physiological development (Fig. 1).

In the second lactation, a further increase in milk productivity was observed. The 305-day yield rose to 3900 kg, exceeding the breed standard by 400 kg. The fat content in the milk was 3.72%, and the protein content was 3.22%, which remains within breed standards. The gross yield of milk fat was 145.08 kg, and milk protein was 125.58 kg, which is 15.58 kg and 10.08 kg more than the standard values, respectively. The live weight of second-lactation cows reached 545 kg, indicating the further growth and formation of the animals' bodies, which positively affects their productivity levels.



Indicator	Count	Milk yield per 305 days, kg	Fat %	Fat kg	Protein %	Protein kg
I lactation	36	3600	3.68	132.48	3.25	117.00
Breed standard	-	3100	3.7	114.70	3.3	102.30
± from standard	-	+500	-0.02	+17.78	-0.05	+14.70
II lactation	34	3900	3.72	145.08	3.22	125.58
Breed standard	-	3500	3.7	129.50	3.3	115.50
± from standard	-	+400	+0.02	+15.58	-0.08	+10.08
III lactation & older	50	4150	3.74	155.21	3.22	133.63
Breed standard	-	3900	3.7	144.30	3.3	128.70
± from standard	-	+250	+0.04	+10.91	-0.08	+4.93

Fig. 1. **Dynamics of milk productivity of cows across lactations**

The highest milk productivity indicators were characteristic of cows in their third lactation and older. The average yield in this group was 4150 kg of milk over 305 days, which is 250 kg higher than the standard for the Ukrainian Red Dairy breed. The fat content in the milk was 3.74%, and the protein content was 3.22%, meeting the breed requirements. The gross yield of milk fat reached 155.21 kg, and milk protein reached 133.63 kg, exceeding the standard by 10.91 kg and 4.93 kg, respectively. The live weight

of cows in this group was 585 kg, indicating full physiological maturity and maximum realization of their productive potential.

The breeding of crossbred animals obtained from crossing Red Steppe and Holstein breeds is an effective solution for the farm. The animals combine high milk productivity (average herd yield — 3850 kg) with a strong constitution and good resistance.

A clear pattern of increasing productivity with the age of the animals has been established. The highest indicators were recorded in cows of the III lactation and older — 4150 kg of milk, which is 15.3% more compared to first-calf heifers. Across all age groups, the cows in the studied herd significantly exceed the standards of the Ukrainian Red Dairy breed: by 500 kg in the first lactation, 400 kg in the second, and 250 kg in the third. The fat content in the milk ranges from 3.68–3.74%, and the protein content is 3.22–3.25%, ensuring a high gross yield of nutrients (up to 155.2 kg of fat and 133.6 kg of protein in full-grown cows). The gradual increase in live weight from 505 kg (I lactation) to 585 kg (III+ lactation) indicates appropriate feeding and housing conditions, contributing to the full realization of the animals' genetic potential.

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