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Development of the genetic potential of the herd. "Key Indicators"

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ABSTRACT

Creation of a strong thoroughbred herd.

Keywords:

Farm, genetic potential, milk, cow, lactation, calving, bull, seeds, insemination.

Introduction: Each dairy farm, in order to continue or increase milk production at the planned level and reduce the cost of milk production and purchase of replacement young animals (heifers to replace retired due to age, illness or simply low-productive cows), must self-sufficiency with their own young animals. With the use of artificial insemination with semen from improver bulls and the proper rearing of heifers, you can get healthier and more productive cows than the cows of the previous generation and thus increase your profits. Each farm animal has its own genetic potential for productivity and health, which it receives from its parents and realizes to the extent that the level of nutrition, service and maintenance adopted on its farm allows it. With careful management of zootechnical records, information is accumulated on the genetic and productive value of each cow. These are the following indicators for zootechnical accounting: milk productivity (the amount of milk in kilograms per lactation, the percentage of fat and protein in milk and the

absolute amount of fat and protein obtained in kilograms per lactation).

Materials and Methods: Knowledge of a cow's ability to conceive and the ease or difficulty of her calving is very important. Information about resistance to diseases of the hoof, udder, digestive system and other diseases is very important.

Additional, but important characteristics are information about the height, weight of the animal, the shape of the udder, milk teats, spine, positioning of the legs and pelvic bones. To improve the genetic milk productivity and improve other qualities of livestock, it is necessary to apply an artificial insemination system, using the semen of bulls with already known genetic characteristics, determined by the quality of the offspring. For each cow, it is necessary to select a bull that, with its genetics, is able to correct the shortcomings of the mother cow in her daughters. It should be noted that not all manufacturers and suppliers of frozen bull semen are able to determine the necessary genetic characteristics of bulls.

Currently, most bull semen producers are limited to the fastest and cheapest way to evaluate bulls: genetic blood testing. However, at the present time, it is believed that the data of genetic analysis of blood reliably confirm only the milk characteristics of bulls, but the characteristics of other important indicators are still not sufficiently reliable. By selecting an improver bull for each cow and replacing culled cows with improved heifers, it is possible to obtain a herd of highly bred and highly productive animals that bring the greatest profit in a few years. Further growth in profits can be ensured by reducing the cost of maintaining the farm (reducing the number of employees, with an increase in wages, the acquisition of more modern equipment, the introduction of new work technologies, etc.).

Key indicator "lactation days"

A very important aspect of the farm is the stability of milk production. If the amount of milk produced varies significantly from month to month during the year, it will make it very difficult to sell it to milk processors or sell dairy products if the farm itself produces them. In former times, milk productivity and the fertility of cows were highly dependent on the seasons and livestock feeding rations. At present, the modern level of organization of feeding and keeping animals makes it possible to maintain approximately the same level of milk productivity and fertility of cows throughout the year. The amount of milk produced daily by a cow or on the whole farm depends not only on the level of feeding and maintenance, but also on the average number of days in lactation for each cow and the average for the herd. Having reached the peak of lactation, 40-60 days after calving, the cow physiologically, simultaneously with a decrease in the level of the milk hormone prolactin, monthly reduces (by 9-10%) milk production. For uniform milk production on the farm, it is necessary that calving be evenly distributed throughout the year. Approximately 8-9% of cows should calve monthly: (100% of cows: 12 months = 8.33≈8.5-9% per month). At the same time, all 100% of the cows on the farm should calve within a year (12 months). With calving of 100% cows evenly throughout the year,

maximum milk and calf production can be achieved. At the same time, the average number of days in lactation for the herd will be about 180 days. This is one of the main "key" indicators of the state of the farm. Calculating this indicator as the average number of days in lactation from each cow on the farm, it is possible to determine those who ditches that, by their "poor fertility" or lack of estrus cycle after calving or insemination, worsen this key indicator, thereby reducing the average milk production and profitability of the farm. These cows are the object of veterinary influence and candidates for culling.

Key indicator "empty days"

Since there are 365 days in a year, and the gestation period of cows is about 280-290 days, this means that if we want each cow to calve once a year, then she should become pregnant 85-90 days after calving. It is estimated that each day beyond this time will result in a shortfall of approximately one US dollar per day if you sell milk as a raw material, and about three US dollars if you process it yourself and sell dairy products. The price for milk depends not only on the percentage of fat and protein in milk, but also on the level of bacterial contamination of milk. It is impossible not to recognize the fact that in most cows after the third calving, the ability to fertilize is significantly reduced and the bacterial contamination of milk increases. Therefore, in countries with developed dairy production, about 30% of cows are replaced (culled) annually. Usually cows with problems with insemination (more than four inseminations), with difficulties at calving, with problems of mastitis, lameness, problems with digestion are culled. In addition, cows with a lower herd average milk production are culled. If there are more promising heifers, more "weak cows" are culled for replacement. Only those few cows that are as profitable as younger cows remain for the fourth and subsequent calvings. By culling almost all cows after the third calving and leaving additional offspring of these very strong cows in the herd, gradually, the daughters of these strong cows accumulate and the whole herd is genetically improved. This "natural" process of herd genetic improvement

can take many years. If you use a bull that improves fertility and resistance to mastitis of cows, then the process of selecting cows for this trait can be reduced to 3-4 generations of cows (10-15 years) - the time of working activity of one generation of farm management workers. If a farm's key average "days in lactation" is greater than 180-200 days, then the key "empty days" is typically greater than 85-90 days as well. To reduce these indicators, it is necessary to identify problem cows and apply some kind of estrus synchronization scheme for cows. When using hormonal estrus synchronization schemes, the cow's natural sexual cycle is often disrupted, and this cow can be culled for the next lactation. Therefore, in order to increase fertility in the herd, it is desirable to focus on genetic improvement of the herd as a long-term program and improvement of the feeding system as an ongoing effort. It is believed that one of the main problems leading to low fertility is the imbalance of feeding in the dry and fresh period. The first or even the second egg that ovulates after calving is practically formed in the body of a cow 40-60 days before calving - that is, even during the dry period. Any deficiencies / shortages in the animal's diet (vitamins, micro / macro elements, an incorrect balance between the nutrients of the diet) leads to the formation of a defective egg, which, even if fertilization occurs, dies with further development. As a result, we get a 40-50 day cold, which throws the cow into a loss-making state in this lactation. As you know, the first ovulation after calving in a healthy cow occurs about 25-27 days after calving. Usually the farm staff cannot notice this estrus, because most often the cow does not show it outwardly. Only special milking equipment that monitors the number of steps of each cow and detects an increase in the pedal (stepping) activity of each cow is able to determine this estrus. However, high-producing cows during the milking period of 0-60 days after calving show a negative energy balance. Productive insemination usually does not occur during this period. However, a specially calculated level of feeding, during the dry and fresh period, as well as a program of hormonal synchronization of

estrus, starting from the fourth day after calving, allows for fruitful insemination with a potential success rate of 30-35% by 40 days after calving. The next insemination with a potential success rate of 30-35% usually occurs 20 days later at 60-65 days after calving and finally the third insemination occurs at 80-85 days after calving. Those cows that remain infertile are candidates for culling.

Findings.

1. The program of genetic improvement of the herd, even when using the semen of special improver bulls, requires a change of 3-4 generations of cows (10-15 years).
2. It is necessary to enter a computerized control program herd monitoring, which allows you to derive key indicators and identify problem cows that require immediate additional veterinary attention.
3. The division of cows into production groups according to productivity and gynecological status and the introduction of special diets, using hormonal schemes for synchronizing estrus, allows you to get closer to the maximum profit.

List of used literature

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