Omelchenko, N.A., PhD (Agriculture),
Pyshmantseva N.A., PhD(Agriculture),
The North Caucasus Research Institute of Animal Husbandry
(SSI SKNIIZH RAAS)

Krasnodar, Russia
2010r.

EFFECTIVENESS OF PROBIOTICS "BACELL" AND "MONOSPORIN" IN COWS AND CALVES RATIONS

In recent years, science and practice proved that the probiotic products can improve digestion, metabolism, and increase the productivity of animal production and economic results. A herd of cows, characterized by high dairy or meat productivity is a genetically based potential. There is no doubt that high results cannot be achieved without high-quality forage. However, even under these conditions, the success is not always guaranteed. If the young animals transferred to the main herd as a repair stock, had suffered from gastro-intestinal or respiratory disease, their future productivity can be 30-40% lower compared to genetically stipulated. Therefore, prevention of diseases of young animals is much more appropriate from an economic point of view than their treatment.

Gastrointestinal diseases in calves cause the greatest damage in cattle, because they are due to the imbalance of the normal intestinal micro flora and reduce its natural protective properties. It should be emphasized that it is impossible to refuse vaccination, disinfection, and use of different antibiotics, anthelminthic drugs and coccidiostatics when indicated. For example, the complete abandonment of antibiotics can lead to the spread of infection to all stock with a sharp decline in production values, but it is necessary to restore the normal micro flora after their application. That is what probiotic preparations are intended for.

Early administration of probiotic preparations to the newborn calves is also important because a normal intestinal micro flora in newborn animals serves as the first and safe stimulant of their immune system.

The use of probiotics in animal feed contributes to the development of beneficial micro flora (normal flora) populating the gastrointestinal tract and attaching to epithelial cells of the stomach and intestines, successfully combats pathogens coming from the external environment. Besides normal flora disinfects toxins, it is actively involved in the synthesis of vitamins such as B, C, D, E, K, amino acids, resulting in better use of feed by the animals.

In recent years several new probiotic preparations requiring detailed study and implementation have appeared.

The purpose of the experiment was to study the feasibility of use of probiotic preparations "Bacell" and "Monosporin" in the rations of cows and calves and their economic efficiency.

Scientific and economic test was organized with two groups of cows (10 cows in each group) of the farm "RASSVET" of the RAAS State Research Institute of Animal Husbandry. Pregnant cows were selected for 1.5-2 months before calving on the basis of their productivity during the previous lactation, age, live weight, number of calving. After calving, the test was continued during lactation (5 months) and using the calves according to the groups the cows belong to. The experimental design included control group of dry and lactating cows that received the basic balanced diet (silage, hay, alfalfa, Sudan grass, molasses, sunflower meal, combined feed). The cows of the second group received the same diet with the probiotic "Bacell" added as follows: dry cows got 60 g per head, milking cows - 70 g mixed with combined feed once a day (in the morning).

After calving the cows and the calves in both groups received the forage of the same feed value. The second group of calves received whole milk from the date of birth with a liquid mixture of "Monosporin" (4 mg per head) for 8 days and then probiotic "Bacell" (10 g per head) for the period of 1 month, and later 20 grams per head till they reached 4,5 months of age. After birth the calves were weighed individually. Then calves were weighed once a month; feed and probiotic preparations intake was recorded.

Cows control milking was every ten days. The quality of milk (fat and protein content) was determined in the laboratory of milk and blood of the North Caucasus Research Institute of Animal Husbandry.

Table 1

Indicators of cows productivity with "Bacell" probiotics in their diet (an average of 150 days)

Indicators	Group	
	1 Control	2 Test
Gross milk yield per head, natural weight, kg	2541	2862
Milk fat content, %	3,77±0,1	4,09±0,1
Milk protein content, %	3,07±0,1	3,07±0,1
Gross milk yield per cow,registered weight, kg	2815,5	3440
The average daily milk yield per cow, kg	18,8±1,2	23,3±1,2***
% to control	100	123,9

*** - P<0,001

As a result of studies (Table 1) it has been determined that probiotic "Bacell" when fed to pregnant cows at the rate of 60 g per head, resulted in 2,5% (40 kg) increase of calves live weight at birth versus control group (39 kg). Administering probiotics to lactating cows (70 g per head) resulted in an increased milk production of cows. Milk yield per cow during test period in the control group was 2541 kg in bulk (with 3,77% fat content), while in the experimental group it was 2862 kg (12,6% increase compared to control), with fat content of 4,09% exceeding control 8,5%.

The daily milk yield (3.4% base milk fat) in the control group was 18,8 kg, and in the experimental group it was 23,3 kg that is exceeding the control values control 23,9% (with high confidence). It is noticed that adding "Bacella" to the cattle ration increases the cost of daily feed by 12% (54,34 rubles) compared to control (48,40 rubles). However, due to increased milk yield the costs went down 14,3%. Additional profit per cow was 3509 rubles, profitability increased 18%.

The zootechnical and economic performance of growing calves have also been studied with probiotics "Monosporin" and "Bacell" added to their diet. Each group consisted of nine calves.

Table 2

The zootechnical and economic performance of growing calves with probiotics "Monosporin" and "Bacell" added to their diet

Indicators	Group	
	1 Control	2 Test
Live weight of calves at the experiment beginning, kg	39±0,6	40±0,5
Live weight of calves at the end of experiment, kg	114,0±7,6	125,1±6,0
Gross growth gain, kg	75,0±7,5	85,1±5,6
Average daily gain, g	564,0±30,2	643,6±24,0*
% to control	100	114
Cost of feed consumed per head, rubles	25,57	28,47
Expenses per 1 kg live weight gain, rubles	49,96	43,64
% to control	100	87,2
Self cost of 1 kg live weight gain, rubles	124,07	110,45

*- $P<0,05$

During the growing period of 135 days the average live weight daily gain in the control group was 564,0 g, and the experimental – 643,6 g, i.e. 14% increase (Table 2).

The cost of feed intake was 3.3% higher with the introduction of probiotics compared to the control group. However, due to increased live weight gain in calves, the costs decreased 11% and constituted 110,45 rubles compared to control group (124,07 rubles) per 1 kg gain. Adding probiotics "Monosporin" and "Bacell" gave additional profit of 1218 rubles per head. The amount of spent nutrients per 1 kg live weight gain decreased 12% compared to control animals.

Increased productivity of the calves of the experimental group was due to higher productive interaction of feeds with probiotics, earlier formation of normal flora of the gastrointestinal tract compared to the control group, thus leading to a better feed conversion and increased body weight. Therefore, to improve the formation of intestinal colonization resistance it is necessary to add "Monosporin" and "Bacell" to newborn calves rations starting from the first colostrum inytake.