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Quality of colostrum of cows and growth of young animals atuse of pasture feeds tuff

M. Grankivskyi
Zhytomyr National Agroecological University

The purpose. To study in fluence of past ure growing of cows upon colostrum productivity, quality of fore milkan dintensity of growth of young animals. **Methods**. Field, laboratory, mathematical-and-statistical. **Results.** Ability is analyzed of pasture feed stuff of semi-naturall and stoensure highefficiency and quality of colostrum that in fluence sovergrowth of alivemass of calves. **Conclusions.** In Zhytomyr Polissyause of pasture feeds tuffinration of cowsensures production of high-quality colostrum whichpositive lyinfluences growth and development of calves.

Keywords: colostrum, productivity, quality, ration, pasturefeedstuff, dynamic sof over growth of alivemass of calves.

Cattle breeding is a leading field of animal husbandry. Its share of the total price of live-stock product constitutes over 63%. Cattle gives the most valuable food product — milk. Overall 10615.4 K tons of milk were produced in 2015 Ukraine, which is by 4,6% less than in 2014. The reason is the reduction of milk cows' livestock. One of the main ways to improve the situation is to increase the milk production volume by means of increasing cows' productive performance.

It is known that after calving the milk production capacity in cows is increasing rapidly, but there is a lack of nutriments and energy that an animal consumes with food. The task of providing cows with nutriments and energy only from pasture forage is complicated with changes in quality and productivity during the whole period. However, using pastures is efficient in terms of economics, so it draws attention of manufacturers.

That is why the problem of providing milk cows with nutriments and energy from pasture forage is a currently important issue.

The analysis of the latest researches and publications.

In dairy cattle breeding the pasture season is of critical importance for increasing cattle production capacity, gain in its health and reproductive functions, and milk cost reduction.

The duration of pasture season in different areas of our country varies from 120 to 195 days, depending on climatic parameters. During one pasture season manufacturers get about one half of the annual milk production. And the milk is the cheapest[8].

This period also draws particular attention due to the start and peak of lactation, which is characterized by the rapid increase of milking productivity.

At the lactation start the cows' needs in energy as well as proteins are increasing. Using of additional source of protein during this period reduces the risk of liver deceases, improves fat breakdown, prevents metabolic disorders and stimulates milking production performance and stimulates reproductive ability[2,7,9,].

But sometimes pasture forage can't satisfy cows' general needs in nutriments[10]. Especially it is relevant for first days of lactation (colostral period), during which the lactation productive potential is being established and the growth and development of litter is being formed. In the cases of pasture grass underconsumption (less than 3 kg of dry matters per 100 kg live weight) animals need additional feeding. It is beneficial to include herbage, concentrated fodder, heylage etc. to cows' diet during this period [1,3,4,6]. However, there is no consensus of opinion on the efficiency of different types and levels of

feeding. And the available in scientific literature data on balancing cows' diet during pasture season is usually quite disputable.

Taking into account all of the above statements, in our researches we **aimed** at studying the influence of additional feeding using semi-natural pastures on the cows' milking productive performance, colostral milk quality and growth intensity of litter.

Materials and methodology of researches.

The studying of the influence of additional feeding using semi-natural pastures on the cows' milking productive performance, colostral milk quality and litter's growth intensity was being carried out in scientific and production experiment at the farming enterprise “Kavetskyi” from Narodnychi district, Zhytomyr region.

The experiment was conducted on Holstein milk cows, formed with a method of analogous pairs with the consideration of age, productive capacity and physiological state. The animals were divided into two groups, according to the plan presented in the Table 1.

1. The general plan of the researches

Groups	Number of animals	Duration of the experiment (days)	Feeding
I-control	12	7	Pasturing+additional feeding with haylage
II-research	12	7	Pasturing+additional feeding with haylage+concentrated fodder.

According to the plan, the animals from the Group 1 were kept at a pasture and were additionally fed with herbage when they were at a building. The animals from the Group 2 were fed pasture forage, herbage and 1.5 kg of concentrated fodder[5].

The pastures were characterized as semi-natural with poor soddy-podzolic soil.

During experiment we studied the pasture productivity using the methods of moving with the 1st ^{2} and weighing with re-calculation on one ha, quantitative analysis of the botanical composition of herb layer, gamma ray spectroscopy of radiation pollution.

We studied the colostral milk productivity during first 7 days after calving, using the method of everyday control milk yield.

The samples of colostral milk were collected during control yields with the volume of 0.5 liter. The samples were immediately conserved with the drug “Broad Spectrum Microtabs II” and directed to the lavoratory for further researches.

The following components were found in the colostral milk: dry matter — GOST 3626-73, protein — GOST-5867-90, fat — GOST-23327-98, sugar — by refractometry, ash - by burning weighed quantity of the milk.

The influence of different feeding types on the growth and development of litter was studied using the method of weighing calves right after their birth and on the 7th day of their lives.

The calves were fed colstral milk in small doses up to 6 times a day in amount of 1.5-2 liters. After each feeding the feeders were washed with warm water, antiseptisized, rinsed with water jet and dried. The rubber nipple was rinsed with water and boiled in 1% solution of sodium hypochloride for 2 min.

The research results were interpreted through variation statistics using the methodology of M. A. Plokhinskiy and Ye. K. Merkurieva and the Microsoft Office Excel software.

Research results.

Having studied the peculiarities of pasture management of cows, we found that the meadow vegetation, which consisted mainly of perennial wild grasses with the majority of cereals in the amount of

76%, was predominant in grass stand. Legumes constituted 10%, while herbs — 14%. The radioactive-contamination level at ^{137}Cs was in the range of 4-5 Ci/km^2 (148-185 Bq/km^2).

The pasture productivity was in the range of 180 dt/ha - 215 dt/ha and depended on the roundup applied. When cows were pastured, the length of grass stand constituted 14-17 cm.

Having studied the cow colostral milk productivity, we found that the daily milk yield of cows that have just calved was rather high and constituted on average 22.7 - 23.97 kg per day (Table 2).

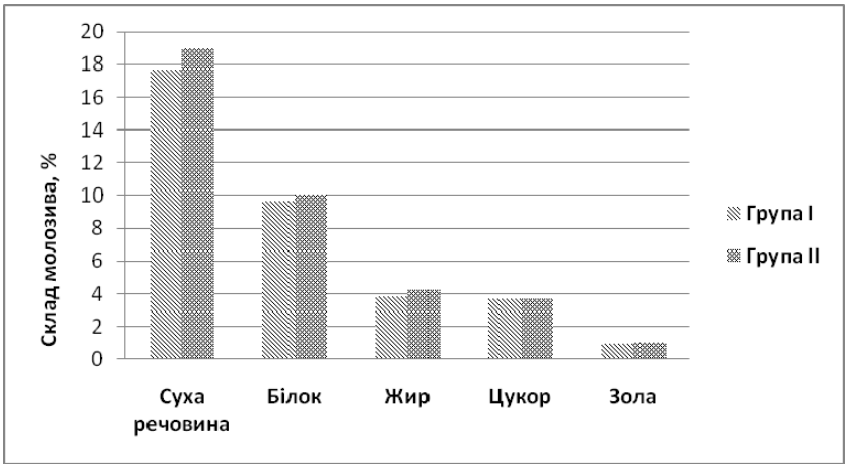
2. The cow productivity during the colostral period of lactation, kg per day

Period (7 days)	Groups	
	I-group	II-group
1	23.4±1.51	24.57±0.85
2	24.43±0.51	25.83±0.9
3	23.27±0.64	24.83±0.76
4	22.17±0.76	24.37±0.55
5	21.37±0.55	23±1.0
6	22.4±0.79	23.4±1.64
7	21.87±0.23	21.83±0.29
Average of period	22.7±1.05	23.97±1.4

The top productivity is observed on the second day after calving in both groups. Nevertheless, the productivity indices of the groups slightly vary. Thus, the milk yield of the first group on the second day reached the highest point and constituted 24.23 kg per day, while the milk yield of the second group constituted 25.28 kg per day. However, this difference is uncertain according to the results of mathematical treatment.

At the beginning of research the content of ^{137}Cs in colostral milk was in the range of 30-27 Bq/kg for the first and second groups of test cows respectively, but on the seventh day of research the content of radionuclide decreased and constituted 22 Bq/kg for the first group and 20.5 Bq/kg for the second group of animals, which comply with the regulations (ДР-2006).

We found that the full feeding influences both the productivity and quality of colostral milk (Fig. 1).



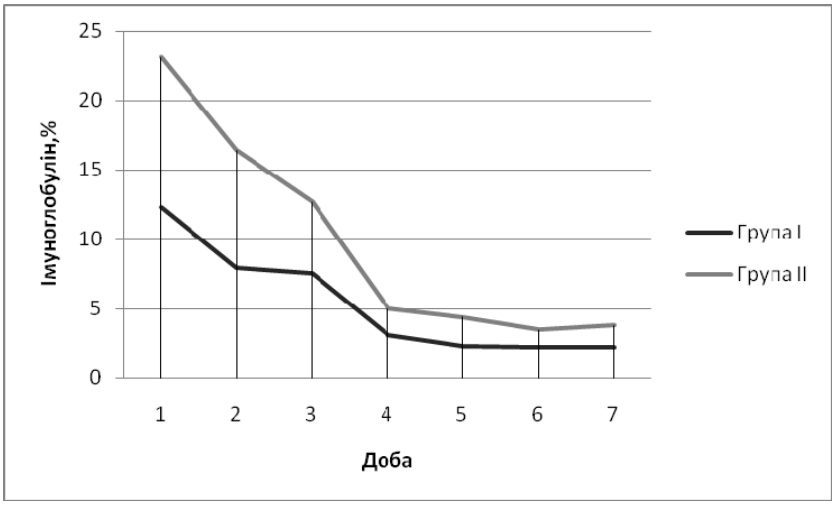
Складмолозива, %	Composition of colostral milk, %
Група I, II	Group I, II
Сухаречовина	Dry matter
Білок	Protein
Жир	Fat
Цукор	Sugar
Зола	Ash

Fig. 1. The average qualitative indices of milk within 7 days

The content of dry basis, protein, fat and sugar in colostral milk was rather high and slightly varied in groups and time after calving. Thus, the qualitative indices of colostral milk produced by cows that obtained additional concentrates were higher than in the control group. However, these differences are not significant and certain.

Having assessed the changes in qualitative indices of colostral milk after calving, we found that the protein level is the most changeable. Thus, the total protein level reduces by 5.5 times in comparison with index of the first milk yield, which results in decrease of immunoglobulins.

The sharpest decrease of immunoglobulins in colostral milk was observed during the first four days after calving. At the beginning of the fifth day colostral milk and milk contain almost equal amount of immunoglobulins (Fig.2).

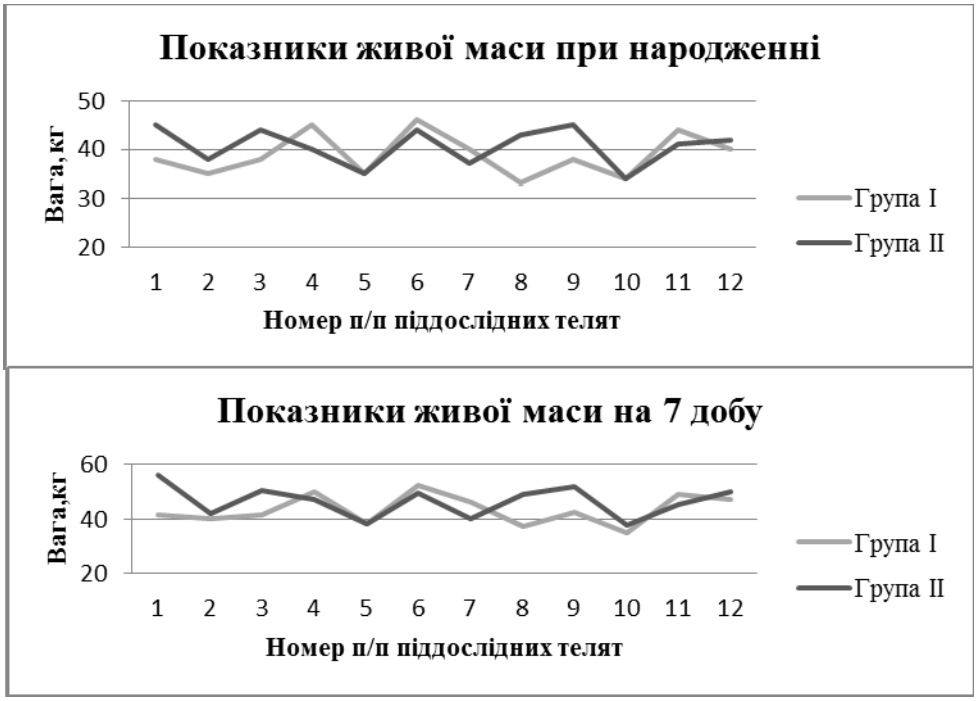


Імуноглобулін,%	Immunoglobulin, %
Група I, II	Group I, II
Доба	Day

Fig. 2. Decrease dynamics of immunoglobulins in colostral milk

In the research it is established that the content of total protein and its fractions in blood of newborn calves depends on amount and quality of colostral milk fed on the first day. These changes are caused mostly by rapid extension of γ-globulin-rich fraction, which has quite similar physical and chemical properties to antibodies. It is necessary to feed the calves with colostral milk of high quality in order to provide their normal growth and development.

We found that the birth rate of bulls against heifers is lower and constitutes 4:6 respectively. The increase in heifers during seven days is in the range of 450-550 g per day, while the increase in bulls constitutes 650-800 g per day due to the ability of bulls to develop body weight (Fig. 3). Having compared the groups, we fixed that the second group tends to have better increase in calves by 11%, which is the result of better feeding the cows that have just calved and consequently higher quality of colostral milk. The colostral milk is the only food for calves in this period.



Показники живої маси при народженні	Indicies of live weight at birth
Вага, кг	Weight, kg
Група I, II	Group I, II
Номер п/п піддослідних телят	Number of experimental calf
Показники живої маси на 7 добу	Indicies of live weight on 7 day

Fig. 3. Increasing dynamics of calves live weight

Thus, the pasture management of cows positively influences the cow productivity during the colostral period and their reproductive functions. The additional concentrates in pasture forage (pasture and feeding with herbage) improve the quality of colostral milk and positively influence the calves' growth and development in the colostral period.

Thus, the conducted research proves that the used pastures do not provide animals that have just calved with the nutrients. Feeding the cows in pasture season positively influences the colostral milk productivity, quality of colostral milk and growth and development of newborn animals.

The additional concentrates in pasture forage of cows in this period in the amount of 1.5 kg lead to increase in milk yields by 5% and improve the qualitative characteristics of colostral milk.

Conclusions

In Zhytomyr Polis sya use of pastu Refeeds tuffin ration of cow sensu resproduction of high-quality colostrum which positiv elyin fluencesgrowth and development of calves.

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