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J21509-005

Shmalii A.P., Polischuk T.V. , Pikula O.A.

AVERAGE DAILY MILK YIELD OF COWS UNDER DIFFERENT MILKING REGIMES AND FEEDING SCHEDULE

Vinnytsia national agrarian university
Vinnytsia, Soniachna St. 3, 21008

It was investigated that regular regime of milking cows needs feeding on schedule; it will result in milk yields increase for 3-4 months of lactation while forming lactation curve; breaking feeding schedule on one hour later or earlier causes deviation of stable curve. The regular regime of milking and feeding on schedule will increase milk yields from 15.8 kg to 17.9 kg per day in ten days; it is 13.3% (P<0.001).

Key words: cows, regular regime, variable regime, milking, feeding, forage, schedule, average daily milk yields.

Introduction. The modern world requires the milk of high quality and in sufficient amount from producers; it is very urgent factor of production. At the reorganized agricultural enterprises producing milk the regimes of cows milking and feeding as a rule do not meet the regulatory requirements adopted by administration norms of technological design and requirements of veterinary medicine [3].

The problem of the multiplicity of cows milking and length of intervals between milking has been discussed more than once in the field of dairy cattle-breeding. It was researched by many scientists such as E. Admin (1983), O. Borshch (2000) and L. Kosior (2009). Nowadays there is no consensus among scientists and practical workers.

The milking techniques and organization also influences on their milk productivity. The main problems connected with rational organization of milking are number of milking and the intervals between them.

It was proved that intensive milk supplying takes place when the udder is filled with milk. That's why we must consider udder capacity and intensity of milk production when determine the amount of the milking and the intervals between them [1,2,4].

According to the schedule all types of operations at the dairy farms must be done by defined milking frequency depending on the cows' productivity level and the frequency of milking depending on the 1 cwt of ration. Schedule breaking can cause sudden fall of animal productivity [5,6] .

Apart from the general technologies processes breaking the producers don't follow schedule of feeding. Following of milking cow schedule facilitate high milking yields. First of all, it is necessary to control if the intervals between milking and feeding are equal.

The purpose of research. Thus there are different views on productivity when the milking schedule is при дотриманні та порушені режимів доїння, the data about simultaneous breaking of milking and feeding regimes are not specified. That's why it is necessary to investigate productivity under both variable and constant milking regimes of cows when feeding doesn't follow schedule; this problem should

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be scientifically justified.

Materials and methods of research. The research was conducted at affiliate "Peredovyk" of closed join-stock company "Podillia" of the village Dovzhok, Yampil district, Vinnytsia region. The milking herd is kept tethered at the farm, the milking is done under various regimes, the feeding is done on schedule.

Three experiments were conducted for the investigation of this problem, six groups of 10 cows of Ukrainian red -and-white dairy breed of the 2nd lactation were formed on the basis of group analogues. The control and experimental groups were formed for the first experiment. The cows of the control group were kept under the adopted technology; the milking was done differently but the feeding on schedule. When the milking regime is variable the rules of milking doesn't meet the standards, in particular the length and speed of milking, milk production are changed; there is an extra milking by hand. The cows of the second experimental group were milked regularly; the process meets all the standards and the feeding on schedule.

The control and experimental groups were also formed for the second and third experiment. The milking of cows control groups was made irregularly; the milking of cows of the experimental group was made regularly. In second experiment the feeding was done one hour earlier than on schedule, in the third one it was done one hour later.

The milk tests were taken every day for ten day period.

The experiments were conducted at the same level, feeding and diets.

Biometric analysis of the results was performed by the method of variation statistics by N.A. Plokhynskyi methodology (1969), where difference were reliable $P<0.05$ – $P<0.001$ compared to control *$P<0.05$; **$P<0.01$; ***$P<0.001$. Mathematical data processing was performed on a personal computer using the program MS «Excel- 97" for Windows.

The results of research. After the 1st experiment it`s proved when the feeding is on schedule, under the regular regime the milk yields (table 1) on the 10th day is 17.9 kg of milk, it is increased by 12 % ($P<0.001$) in comparison with 1st research day; it was 15.8 kg of milk. So if feeding is on schedule and the regime is regular the milk yield is increased by 10% in comparison with variable, where milk yield is 15 kg.

At the 2nd experiment the feeding was done one hour earlier than on schedule. So the reliable difference ($P<0.01$) is observed in the milk on the 6th day of the research between regular and variable regimes. On the 6th day the milk yield was 15.9 kg under regular regime; it is higher by 5.7 % than under variable regime.

At the 3rd experiment when feeding was done one hour later than on schedule the difference of milking regimes was determined on the first, second, fifth and eighth research days. The milk yields were respectively 16.0 kg, 15.7 kg, 15.2 kg and 14.5 kg on these days; they were higher by 5.6 ($P<0.05$); 6.4 ($P<0.05$); 4.0 ($P<0.05$) and 4.2 % ($P<0.05$) respectively than under variable regim

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Table 1

Average Daily Milk Yield of Cows under Different Milking Regimes and Feeding Schedule

The days of experiment	Feeding on schedule (1st experiment)		Feeding on one hour earlier than on schedule (2nd experiment)		Feeding on one hour later than on schedule (3rd experiment)	
	Variable regime (control)	Regular regime (experimental)	Variable regime (control)	Regular regime (experimental)	Variable regime (control)	Regular regime (experimental)
First	15,5±0,17	15,8±0,18	15,9±0,24	16,3±0,13	15,1±0,17	16,0±0,24^
Second	15,1±0,09	15,6±0,14^	15,6±0,23	15,9±0,13	14,7±0,24	15,7±0,26^
Third	15,0±0,11	15,9±0,18^^	15,5±0,20	16,0±0,28	15,0±0,18	15,4±0,12
Fourth	14,8±0,13	16,0±0,21^^	15,4±0,13*	15,8±0,22	14,9±0,28	15,1±0,24*
Fifth	14,5±0,17	16,4±0,17^^^	15,5±0,22**	16,1±0,21	14,6±0,10	15,2±0,16***^
Sixth	14,2±0,14	16,7±0,23^^^	15,0±0,14**	15,9±0,19*^^	14,4±0,21	15,0±0,19***
Seventh	14,8±0,17	16,9±0,31^^^	14,8±0,18	15,2±0,22**	14,3±0,21	14,8±0,21***
Eighth	15,0±0,13	17,0±0,21^^^	14,4±0,21*	14,9±0,20***	13,9±0,19***	14,5±0,16***^
Ninth	15,4±0,24	17,5±0,24^^^	14,0±0,19**	14,5±0,13***	14,2±0,18**	14,7±0,17***
Tenth	15,8±0,17	17,9±0,14^^^	13,8±0,21***	14,0±0,16***	14,4±0,20***	14,8±0,23***

*Notes * P<0,05; ** P<0,01; *** P<0,001 – in comparison with feeding on schedule (1st experiment);*
^ P<0,05; ^^ P<0,01; ^^^ P<0,001 – in comparison with variable milking regime (control group).

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It was determined, that daily milk yield of experimental cows under variable milking regime from control group was 15.5 kg; besides the feeding schedule will be followed. The milk yield of the second experiment control group was 15.9 kg, where feeding schedule was changed one hour earlier. The milk yield of the third experiment control group was 15.1 kg, where feeding schedule was changed one hour later. The reliable difference between experimental groups was not determined.

The group of cows with variable milking regime and feeding schedule was changed one hour earlier had milking yield of 15.5 kg, it increased by 10% ($P<0.01$) in comparison with regular feeding. On the 9^{th} day of experiment the milk yield is higher by 10% ($P<0.01$) in the group with one hour earlier feeding than in group with simultaneous feeding and milking on schedule. On the 10^{th} day of experiment the milking yield was 13.8 kg; it was by 14% higher ($P<0.001$). The milk yields have not changed by the fifth day under regular milking regime with one hour earlier feeding; they begin to decline from 15.9 kg to 14.0 kg or by 12% from the 6^{th} day.

Comparing regular milking regime under different schedule, in particular on schedule and one hour earlier feeding, the reliable difference is observed on the sixth day. The average yield of the last five days of the experiment in the experimental group was 14.9 kg, it was 17.2 kg in the control group, so it was increased by 14 %.

As it is shown in the table the milking yields under variable milking regime and one hour later feeding decreased from 15.1 kg to 13.9 kg or by 8.6% from the first to seventh experimental days. So, the yields on the 8^{th}, 9^{th} and 10^{th} days were respectively 13.9, 14.2 and 14.4 kg; it is lower by an average of 8 % in comparison with yields of cows milked on schedule. The yield of cows milked regularly and fed an hour later was 16.0 kg on the 1^{st} day, but on the 10^{th} day it was 14.8 kg; so it was lower by 7.5%. Under the regular milking regime and regular feeding the yield on the 10^{th} experimental day was 17.9 kg; it was higher by 13% in comparison with the first experimental day.

Comparing two experiments with feeding on schedule and one hour later feeding and regular milking the reliable difference is observed from the fifth experimental day. On this experimental day the milking yield was 15.2 kg under one hour later feeding, it was lower by 9 % ($P<0,001$) than the same scheduled period.

Conclusions: The regular regime of milking and feeding on schedule will increase milk yields from 15.8 kg to 17.9 kg per day in ten days; it is 13.3% ($P<0.001$). The regular regime of milking and one hour earlier caused milk yield decrease from 16.3 kg to 14.0 kg or by 14.1 % ($P<0.001$), while one hour later feeding caused milk yield decrease from 16.0 kg to 14.8 kg or by 7.5 % ($P<0.01$). So it was proved that regular regime of milking cows needs feeding on schedule; it will result in milk yields increase for 3-4 months of lactation while forming lactation curve; breaking feeding schedule on one hour later or earlier causes deviation of stable curve.

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