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Comparative assessment of productive action of grain in silo of com with dry and wet-preserved in feeding milk cows

The purpose. To evaluate productive action of grain of corn in composition of silo, wet-preserved and dry, in feeding cows**. Methods.** In the 1-st experience com silo was substituted with vetch-oat with addition of dry grain equivalent to its content in com silage, and in the 2-nd - they substituted dry grain of com in a ration with wet-preserved one**. Results.** Productive action of grain of corn in silo was for 10% lower tha.n of dry and for 5% lower than for wet-preserved at feeding highly productive cows. In silo-concentrated rations energy value of silo is revaluated, as they do not consider necessity in energy of microorganisms of a rumen. **Conclusions.** The technique of preserving whole wet grain of corn has advantages in comparison with its silage making in the levigated kind. Therefore it is perspective in conditions of industrial milk complexes.

Key words: corn silo, wet grain of com, vetch-oat silo, milk cows, milk productivity.

Corn silage is an important feed for dairy and beef cattle [1, 5, 6, 9].

At the same time, although this feed is a powerful source of exchange energy for cows, but it is

A limited source of ATP energy for microbial fusion synthesis. It is known that acetic, butyric acid, alcohol and other end products of fermentation of silage can not use microorganisms of a rumen, they, on the contrary, suppress the fermentation of starch and fiber. In silo-concentrate rations, the energy value of silage is overestimated because it does not take into account the energy needs of microorganisms. Silage rations do not promote the growth of microbial biomass, and therefore, the production of milk, if during feeding cows silage do not feed them with light-fermented carbohydrates. At the same time, silage contains a significant (20-50%) amount of grain with high (more than 65%) content of starch as a source of easily-enzyme carbohydrates [10, 11]. What is the main reason for reducing the fermentation of starch in the cows' rumen?

The results of the conducted research indicate that there is a close correlation between the content of crude fiber in corn silage and the presence of grain in it [8]. The content of crude protein in silage is not regulated by the amount of grain, since it and the vegetative mass of corn contain almost the same amount of crude protein on a dry matter [3, 7].

As a result of the content of silage 21.7% of crude fiber on dry matter, the grain share is 24.2%, that is, a high quality silage contains a quarter of the grain by weight. If 20 kg of such silo are fed to high-yielding cows, then 5 kg of feed consumed will be on grain. This amount of starch should be sufficient for the needs of the rumen microorganisms in the energy of ATP. Then it turns out that in the process of grain fermentation in the silo there is no synchronization in the need for ATP for the microorganisms of the rumen and the cleavage of starch. At the same time, research has shown an increase of 7% of the productive effect of wet

canned corn corn when fed dairy cows compared with dry grain [2, 4]. This is probably due to the high acid buffering of grain and the action of amylolytic bacteria in the rumen in the pH range of 6.5-7.0. Consequently, starch under such conditions does not undergo fermentation, but enters the small intestine. The same pattern applies to fermentation of grain protein [2, 6].

The purpose of the research is to evaluate the productive effect of corn grain in the composition of silage and wet canned and dried grains in feeding cows.

Material and methods of research. An assessment of the productive effect of 5 kg of maize corn in the amount of 20 kg of silage compared to dry grains in an equivalent quantity of 2.5 kg was carried out in the Oleksandrivske experimental farm of the Podillya Institute of Forage and Agriculture. Two technological groups of cows-analogs of Ukrainian dairy black-and-white breed with an average productivity of 24 kg of average daily allowance were formed in the farm. Cows were in the 3-2 month. Lactation Each group had 30 goals. Control milking was carried out on 10 cows of each group. The basis of highly protein cows diet was sunflower meal and peanut butter. Cows of the control group received 20 kg of corn silage, which contained 6.44 kg of dry matter and 1446 g of crude fiber, which was 20.9% on a dry matter.

Consequently, this silage had 5 kg of silage grain, which in terms of dry grain of standard humidity is equivalent to 2.5 kg. Therefore, for the comparative assessment of the productive effect of corn grain in 20 kg of silage in cows of the experimental group, 2.5 kg of corn spikenum was added to the diet instead of 20 kg of corn silage; this same group fed 22 kg of silage from the oat seed from the crop. In dry matter, such silage contained 39.6% crude fiber and 70.1% neutral detergent fiber versus 29.1 and 55.6%, respectively, in maize silage. In dry matter, corn silage was 8% crude protein, and in oats silage - 8.4%.

In general, cows of the experimental group received 1.94 kg more dry substances based on crude fiber and 71 g more crude protein (Table 1). It is practically impossible to balance the ideal diet for cows of the experimental group, since eating the oat-vikna mixture of feed was better compared to the control group, the dowel of oats silage from the seedlings increased by 2 kg, that is, 22 kg in total against 20 kg of corn silage.

The control should be carried out in 3-5 days individually from 10 cows of each group, and also milk hopes in the group. Experiments were conducted in April - May 2014.

Research results. After carrying out 5 control doses from 10 accounting cows from each group and a gross milk supply of 30 cows from the group, it was found that the highest milk production was made by cows of the experimental group who received oatmeal silage instead of corn silage with compensation of 2.5 kg of corn dormancy , Which is equivalent to 5 kg of grain in 20 kg of corn silage (Table 2). Consequently, dry maize grain in the equivalent amount of dry matter compared to grain in silage had a higher productive effect at the level of 2-2.5 kg per day milk supply (P> 0.95). In the 2nd technological experiment, the productive effect of wet canned corn corn in the amount of 3.2 kg with a moisture content of 35% was compared with 2.4 kg of dry grain, which is identical to the content of dry matter. Studies were also conducted in the experimental farm "Oleksandrivske" of the Institute of Forage and Agriculture of Podillya of the NAAS.

The farm was formed by two technological groups of cows-analogues with a productivity of 24 kg milk daily average. The cows were on 2-3 months. Lactation Each group had 30 cows. Control duties were spent on 10 cows of each group and gross hopes in the group. The group of cows in Group I was similar (shown in Table 1), while in the 2nd group of corn sweats only 0.8 kg was fed, with 3.2 kg of wet canned grain equivalent to 2.4 kg of dry. The diets for both groups were the same for the content of dry matter, feed units and crude protein. Due to the analysis of control doses (Table 3) from 10 accounting cows of both groups, it was found that cows had higher milk yield, receiving 3.2 kg of wet canned corn grain instead of 2.4 kg of dry

cow. The difference in average daily milk supply was 1.1 kg, or 5%. The protein content of the milk of the cows of the two groups was the same, while the fat content was 0.13% lower than the highest milk product at 1.1 kg (see Table 3). What is the reason for higher milk production and lower fat content in milk of cows, which fed 3.2 kg of wet canned corn instead of 2.4 kg dry? Discussion of research results. The lower productive grain yield of corn silage compared to the similar amount of dry matter in the diet is justified by its high buffer acidity (pH 3.7-3.9), while the optimum conditions in the rumen is pH 6.5-7. In this case, part of the grain of the silage forage enters the small intestine, which should be a positive factor, but higher milk production contradicts this.

The results of the comparison of the degree of grinding of grain in the composition of silage and dry, apparently, are based on various productive effects. In the silo harvested using modern devices on combines for additional grain grinding, the whole grain was 14.3%, chopped - 36.2, with a shattered shell - 49.5%. According to the total estimation of whole and split grain on 2, 3 and 4 parts - 63.8% (Table 4), whereas dry has a mostly stable modulus of grinding. For such crushing of grain in the feed mass of the silo, a large part of it enters the intestine and even it undergoes only partial fermentation. Confirmation of this is the remnants of non-split grain on the screen after flushing the feces of the control and experimental groups of cows. The higher productivity of cows by 2-2.5 kg per day milk supply in the conditions of dry grain feed in the equivalent amount of corn silage by dry matter is about 10% (see Table 2). In this case, if a high quality silage contains up to 60% of the whole and damaged grain on parts 2, 3 and 4, then 10% of it will not undergo fermentation in the gastrointestinal tract of cows. Hence, its less productive effect for the formation of milk. At the same time, digestion in the gut of corn silage and dry does not ensure its effective use for the synthesis of milk. The grain of grain and maize silage have low contents of essential amino acids (Figs 1 and 2), so their maximum fermentation should occur in cows' rats for microbial protein synthesis. The silage contains starch in the grain, but with a low degree of fermentation as an energy source of ATP for microbial synthesis. If dry grain has the advantages over such a corn silage, what factors then determine the higher productive effect of wet canned compared to the two previous ones?

The research on cows has established a higher 5% productive effect of wet canned maize grain compared to dry (see Table 3). This is substantiated by the greater contact area of the canned grain with the microflora of cow's rumen than the dry one. Wet grain before use is ground on a DKU to a size of 0.1-0.3 mm, while dry under the same conditions has a grainy up to 1-1.5 mm. At the same time, for freezing sugar maize on any drying unit, free sugars, which contain up to 6%, react with the protein (Mayard's reaction) and form hard-fermented compounds. Hence the reduction of up to 5% of the productive effect of dry corn maize compared to wet cinnamon in the feeding of cows of the same amount in terms of dry matter. Reduction of fat content in milk of cows

Under the conditions of feeding corn moist canned corn and simultaneously increasing the productivity is based on increased fermentation of starch in the rumen, which is a consequence of stimulation of the formation of propionic acid. As you know, propionate reduces the fat content of milk, but is used to synthesize the substitutable amino acids, which are necessary for the increased synthesis of protein proteins.

Conclusions

Corn silage for high starch content in grain is a limited source of ATP energy for microbial synthesis in the rumen. This is explained by the high acidity of the grain (pH 3.7-4) and the effect of amylolytic bacteria in the rumen in the pH range of 6.5-7. Corn grain in silage has a lower productive effect than canned moist and dry.

The technology of preserving the whole wet grain of corn compared to its silage in the crushed form is promising in dairy cattle breeding.

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