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Nutritional and productive performance of green material and silage of winter rye and typhon mix

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The results of researches of quality, energy and nutrient productive action of green mass and silage mixes of typhon and winter rye which was grown in repeated crops are given. Found that feeding of green mass of winter rye and typhon mixes leads to increasing milk production and its quality. Also was found that silage of winter rye and typhon mixes with bacterial enzyme Litofer+ does not lead to a decrease of milk production of cows.

Winter rye, typhon, bacterial enzyme, quality, food value, productive performance, milk

Switching to the year-round one-forage type milk producing technology is not possible without the creation of a strong forage base, which provides harvesting of 1.5-year stock of preserved bulky stern, which were mowed at optimal stage of maturity. However, even well-planned system of forage pipeline may be adjusted by winter and climate conditions. To solve the difficult situation we must keep in mind the re fodder crops with a short vegetation period well vegetating at relatively low temperatures (+3° to + 7°C), requiring a minimum amount of active temperatures (up to 8000 in the spring). Thanks to these crops one sown area can give two or three harvest (on irrigated land), which increases the utilization of solar radiation, thus increasing productivity per hectare of arable land in 1.5-2 times. At the same time the ground much longer remains under cover of plants which synthesize an organic mass.

More than half of it remains in the soil in the form of root-stubble residues, activating microflora and decomposing to readily available nutrients. Also such residues improves agrophysical properties, restore soil fertility and increase crop yield [1]. These crops are using the moisture and warmth in autumn and spring and reach batter ripeness before perennial grasses. At the same time they gives opportunity to cultivate a second full-fledged harvest of corn or another crops (soybeans, buckwheat, millet, etc.). Proper planning of crops allows to prepare early silage or haylage in early May. In the steppe and forest-steppe zones made a good showing the crops of winter rye and wild turnip, which helped to prepare early silage and increase milk production per hectare of fodder wedge [2, 3]. As a raw feed crops typhon is very interesting. Typhon is a winter type hybrid which perfectly resistant to splitting, does not form a root, accumulate no glucosinolates, alkylrescorcinols, non-nutritious substances, but quickly, within 40 - 50 days form the yield (1200 kg/hectare) of high-nutritious mass .

Good-quality silage requires intensive development of lactic acid bacteria and oppression of butyric-acid bacteria. However the plants contains 60-70 times more Clostridium than the lactic acid bacteria. Therefore the adding of additional quantities of lactic acid bacteria is undeniable condition.

The aim of our researches was to determine quality indicators and productive effect of green mass of winter rye and typhon mixes grown under forest-steppes and silage harvested using bacterial and enzyme Litofer+ while feeding dairy cows as part of commercial diet.

Laboratory researches show that energy nutritional value of green mass of winter rye and typhoon mixes was 9.13. Energy nutritional value of silage without preservative was 7.98 and with bacterial enzyme preparation Litofer + it was 8,49MDzh OE /kg of dry matter. The content of crude protein was 14.09, 11.04 and 13.01% respectively. It should be noted that was no butyric acid in both cases. However silage without preservative contained: lactic acid 5.21% (55.84%), acetic acid 4.12% (44.16%), ammonia nitrogen oxide 16.18% of the total nitrogen value, while silage with preservative these figures were 7.78% (72.57%), 2.94% (27.43%)

and 6.1% respectively. These data indicates that the adding of bacterial enzyme contributed the homo-enzymatic lactic fermentation and therefore rapid acidification of silage to the threshold concentration.

Aerobic stability of silage determination researches showed that silage without preservative is not stable. This conclusion is confirmed by the content of organic acids and ammonia nitrogen. So after three days of storage under aerobic conditions observed reduction of lactic acid to 2.17% (37.29%), increasing the proportion of acetic acid to 3.15% (54.12%) and 0.5% butyric acid (8, 59%) and an increasing of ammonia nitrogen to 31.25%. Silo with bacterial enzyme was stable, although there have been changes in the ratio of organic acids: Lactic acid 7.51% (70.06%), acetic acid 3.21% (29.94%), ammonia nitrogen 7.11%.

While determining a productive action difference in feeding cows consisted in that the control group received winter diet, and diet of the experimental group in the first period part of corn silage was replaced by the green mass of winter rye and typhoon mixes by the sustenance, and in the second period by silage mix of winter rye and typhon, harvested with bacterial and enzyme preparations Litofer+.

Green mix with 30.3 g of sugar per kilogram providing improved sugar-protein ratio and increases the total diet intake to 98% at 95% in the control. Increased consumption of feed intake at higher concentrations of crude protein and crude fiber contributed less significant increase milk production by 1.0 kg milk fat by 0.18% and lower costs of feed per kilogram of milk 0,54MDzh.

When feeding silage mixes higher consumption of forage was not observed. Rations of cows of the second period of the experiment for the concentration of crude protein and fiber hardly differed because milk yield was not increased, the difference was within statistical error.

Thus, feeding of green mass of winter rye and typhoon mixes increases milk production and milk quality. Silage harvested using bacterial enzyme does not lead to a decrease in milk production of cows. Using of bacterial enzyme Litofer+ allows to get a highly nutritious silage, which is able to be kept under aerobic conditions, after

opening the silo pit without significant loss of nutrients unlike silage that procured without preservative.

References

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