the latter by urine and faeces. On our farms dairy cows excrete about 75-85 kg N yearly, of which 35-70 % (depending on the feeding ration) are excreted by urine.
Physical modification of feeding rations and doses, application of mixed and calibrated rations, frequency and sequence of feeding can also significantly affect the digestibility, metabolism and excretion of nitrogen.
Comparison of feeding rations containing pulverized and granulated feed mixtures revealed that for instance dairy cows fed granulated mixtures excreted by 24 % less nitrogen with excretion of the latter by urine being significantly decreased.
Different results were observed when dairy cows were fed mixed and calibrated feeding rations. The digestibility of N-substances in mixed feeding rations was increased by 6.5 %.
Nitrogen excretion also depends on milk production. The absolute amount of excreted N increases with the increase in production, however, it decreases by as much as 10 % when re-calculated to 1 kg of milk produced.
Regulation of nitrogen excretion in *growing animals*, mainly feedlot cattle, is a rather complex problem. Positive results can be achieved by decreasing the content of N-substances in the feeding rations when each per cent of decrease enables to reduce the N-output in excreta and urine by about 6-8 %.
Feedlot steers with a live weight of 300–350 kg have a daily intake of 120-180 g N, depending on the type of feeding ration. From this amount they excrete an average of 24–30 kg N per animal and year.
In *swine*, reduction of nitrogen excretion can be achieved mainly by balancing amino acids in the diets. In the present feeding systems for different categories of swine nitrogen retention does not surpass 30 % of the ingested amount. Utilization of nutrients improves with the increasing level of efficiency and the amount of urea nitrogen per kg of product decreases.
Each kilogram of dry matter fed increases nitrogen production in the urea by more than 200 g.
Standardized consumption of nitrogen and multi-phase feeding of fattening pigs can contribute to a decrease in N excretion by more than 10 % when compared to the feeding of universal feeds.
If we combine *protein feeds with synthetic amino acids*, positive results can be achieved in the decrease of nitrogen emission. In practice, a real decrease of N-substances in the feeding rations by 2 % can be counted with.

UTILIZATION OF BIOLOGICAL PREPARATION KOFASIL LIVE AT SILAGING OF GRASS STAND

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Summary

We evaluated the effect of the biological preparation Kofasil Live on the fermentation process at silaging the grass stands. We found out that the silage treated by the preparation showed markedly lower losses of dry matter (8.16% : 14.5 %), higher content of dry matter (28.5 % : 26.6 %) and statistically significantly higher content of crude protein (177.22 g: 174.07 g) compared with the control. The parameters of the fermentation process and lower content of NH_3-N out of total N (4.67 : 11.66 %) were found in the treated silage also.

Key words: silage making, grass stand, biological preparation, bacteria of lactic fermentation

The quality of conserved fodder crops influences decisivelly the economy of cattle breeding. The grass stands contain to a large extent sufficient amounts of saccharides compared with other species of fodder crops and so is the utilization of probiotics in their conservation relevant.
The use of biological inoculants in silage making can improve the start and course of the fermentation process. The additive of microbial cultures into the silage matter shall provide the start of homofermentative fermentation and speed up and improve the fermentation process.

Material and methods

The aim of the work was to evaluate the effect of biological preparation on the quality of fermentation process in silage made of grass stand. The experiment was performed in operation conditions in the silage pit, in bags 30 x 61 cm. The grass stand composed of 80 % grasses, 15 % herbs and 5 % clover crops was ensilaged. The stand was renewed 6 years ago, and it was heavy degraded during the period of harvest. It was manured with 40 kg P in autumn and 60 kg N in spring.
The control matter was treated with no conservation preparation. The experimental variant was treated with the biological preparation Kofasil Live composed of *Lactobacillus plantarum* 3676 and 3677, *Propionic bacterium* 9576 and 9577, medium. The bags with conserved matter were stored 1.8 m from the surface and 80 cm from the bottom of the silage pit. The bags were removed from the pit 336 days after the beginning of ensilaging and the proportion of weight losses was calculated from the difference between the dry matter weight at the beginning and at the end of storage. The content of nutrients was determined by laboratory methods, pH of extract from silage electrometrically, content of lactic acid and volatile fatty acids by gas chromatography, alcohol and ammonia by microdiffusion method as described by Conway. The content of metabolizable

energy (ME) and nett energy (NEL) were calculated as described by Sommer et al. (1994). We elaborated statistically the results of observations by means of Statgraphics 2.6 programme.

Results and discussion

The content of fibre was higher in the silage stand which was harvested in later stage (table 1).
Markedly lower, statistically highly significant losses were found in the silage treated with the preparation Kofasil Live compared with the untreated control. Statistically highly significantly lower pH was also found in the silage treated with Kofasil Live. The content of individual acids was lower in the experimental group except for lactic acid. We found statistically highly significant difference in the content of caproic acid only. The content of NH_3-N out of total N was statistically significantly higher in the control group. The content of alcohol was higher in the control group, too (table 2).
We found out that the content of dry matter decreased in both silages. The difference between silages was statistically highly significant. The content of crude protein, energy, fibre and ash was higher in the silage treated with the preparation Kofasil Live. The difference in crude protein and fibre content was statistically significant between the silages (table 3).
Gruber et al. (1997) found positive results after application of lactic fermentation bacteria in conserved stands. They point out that digestibility of silages and efficiency of animals improved together with the improvement of fermentation process. Similar results in testing the Kofasil Live give also Žiláková et al. (1997) in pH and content of NH_3-N out of total N. Higher content of nutrients and lower content of NH_3-N out of total N in silage treated with Kofasil Live correspond with the findings of Jonsson et al. (1989) and Kwell et al. (1993) who found markedly lower content of NH_3-N out of total N after the application of the biological preparation, as well as with the results of our previous works Gallo and Sommer (2000).

Table 1 Content of nutrients in ensilaged grass matter

Dry matter G	OM	DOM	Crude protein	Fibre	Nitrogen free	Fat	Ash	ME	NEL
	$g.kg^{-1}$ DM extract							$MJ.kg^{-1}$ DM extract	
308	923	574	179	348	362	35	76	8,85	5,17

Table 2 Parameters of fermentation process of the produced silages

Parameter n = 6	Control		Kofasil Live		Statistical significance	
	x	s	x	s	P < 0,05	P < 0,01
Losses of dry matter in %	14,52	1,56	8,16	4,16		1 : 2
PH	4,09	0,04	3,96	0,02		1 : 2
Acids in $g.kg^{-1}$ dry matter						
- lactic	75,25	5,26	83,21	8,40		
- acetic	20,72	4,12	14,80	5,62		
- propionic	1,96	0,55	1,55	0,27		
- butyric +	1,33	0,27	1,03	0,17		
- valeric +	0,51	0,12	0,43	1,78		
- caproic	1,04	0,33	0,45	0,16		1 : 2
NH_3-N out of total N in %	11,66	2,52	4,67	1,74		1 : 2
Alcohol in $g.kg^{-1}$ dry matter	1,71	0,52	1,14	0,61		

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Table 3 Content of nutrients in silages

Parameter n = 6	Control		Kofasil Live		Statistical significance
	x	s	x	s	P < 0,05 P < 0,01
Dry matter in g	266,61	0,23	285,92	1,47	1 : 2
Crude protein in g	174,07	0,11	177,22	0,27	1 : 2
Fibre in g	332,44	0,76	344,20	0,49	1 : 2
Nitrogen-free extract in g	368,61	6,88	353,61	8,76	
Fat in g	46,56	0,12	45,79	0,18	
Ash v g	78,31	0,19	78,67	0,16	
ME in $MJ.kg^{-1}$ dry matter	9,15	0,02	9,15	0,02	
NEL in $MJ.kg^{-1}$ dry matter	5,33	0,01	5,34	0,01	

THE LEVEL OF NUTRITIOUS FEEDING OF COWS ON PASTURES AND ITS INFLUENCE ON SELECTED MILK QUALITY INDICATORS

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Summary

In an experiment with three groups of cows during pasture season selected indicators of technological milk quality were observed in dependence on different level of nutritious feeding of cows. The results confirmed the influence of nutrition (its energetic constituent) on acidifying ability of milk and its solidifying temperature. The type of nutrition influenced values of iodine number. However the level of nutrition in this experiment did not influence rennetability values of milk.

Key words: pasture, nutritious feeding of cows, milk quality, acidifying ability, rennetability, iodine number, point of milk solidifying

Introduction

Under conditions of mountain and submontane regions grass vegetation is the basic component of forage stock. Pasture grass, mainly due to intense cultivation, is rich in nitrogenous components but poor in energy. In relation to the ratio of nitrogenous components to energy it is necessary to consider pasture grass of half-natural type to be exclusively protein forage, which requires additional feeding of cows on pastures by forage rich in energy (KNOTEK et al., 1990, GALLO, 1998). This fact is demonstrated not only by a low effectiveness of basic forage ratio produced on grass matter basis but also by different physiological defects of cows. One of the outcomes is reduced quality of produced milk. In pasture regions we can expect higher urea content and lower content of proteins, non-fat dry matter and lactose. We can also expect more radical development of technological problems during milk processing (HANUŠ et al., 1994, FOLTÝS, 1997). According to SOMMER (2000) the content of nutrients in milk is an indicator of metabolism state of cows, therefore it can be used as a criteria determining quality process of milk production.
The goal of this work was to observe selected indicators of technological quality of milk produced by cows of Slovakian Pinzgau Breed during pasture on the original half-natural grass additionally feed with energetic forage.

Material and methods

There was eighteen cows of Slovakian Pinzgau breed used in this experiment. They were divided into three groups, each containing six cows according to these criteria: approximately the same yield at the beginning of the experiment, same stage of lactation, number of lactations, minimum range of live weight. Cows were pastured on the original half-natural pastures. Grass dosage was given to cows daily in groups. Pasture season lasted 138 days (May 19 - to October 3). Pasture season was divided