Cutting herbage PM or AM and subsequent effects on silage quality

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Introduction

Cutting time influences the contents of water soluble carbohydrates (WSC), where herbage cut in the evening normally has higher WSC contents than herbage cut in the morning.
An experiment was conducted to investigate the effect of cutting time on the fermentation quality and aerobic stability of silage.

Material and Methods

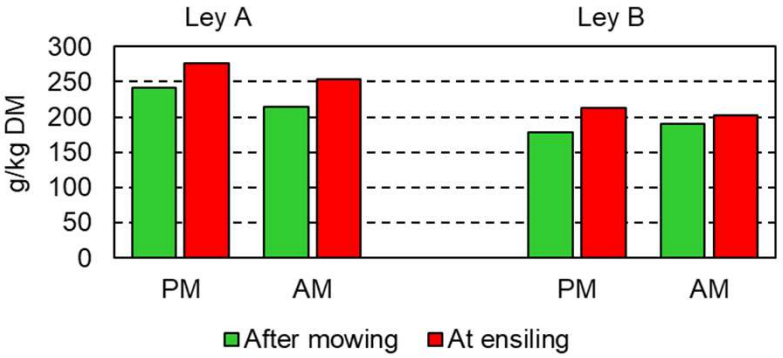
A part of a grass dominated ley (A) and a grass-clover-mixture ley (B) of the first growth was cut in the evening (7 p.m.) and the rest on the following morning (9 a.m.) on the 16th respectively 17th May 2017.

The forage was wilted to 40% dry matter (DM), copped and ensiled during the afternoon of the 17th May 2017 in laboratory silos. After a storage time of 93 days, the silos were opened. The DM-content and the nutrient contents were analysed by Near-infrared spectroscopy (NIRS). Additionally, in the silages the fermentation parameters (pH, acids, ethanol and ammoniac) were analysed and the aerobic stability was investigated.

Results

For ley A, the WSC contents of the herbage decreased during the night, but this was not the case for the herbage of ley B (Figure 1).
The silage of the morning cuts had a better aerobic stability than the silage of the evening cuts (Table 1). The reasons for these differences could be the lower DM content and higher acetic acid content.

Figure 1. Water soluble carbohydrates in the forage after mowing and at ensiling



Tab. 1. DM, fermentation parameters and aerobic stability of the grass silages

		Ley A		Ley B		SE	P-values		
		PM	AM	PM	AM		Ley	Time	L x T
DM	%	43.6	39.6	39.5	34.8	0.77	**	**	ns
pH	g/kg DM	5.5	4.8	5.2	4.7	0.04	*	***	ns
Lactic acid	g/kg DM	23	46	48	76	2.0	***	***	ns
Acetic acid	g/kg DM	7	14	13	22	0.8	***	***	ns
Butyric acid	g/kg DM	1	2	2	2	0.1	**	ns	ns
Ethanol	g/kg DM	29	7	9	8	1.5	**	**	**
NH_3-N/N	%	5.8	6.9	11.2	11.1	0.27	***	ns	ns
DLG	points	90	91	90	93	0.5	ns	*	ns
Stability	days	4.9	10.4	5.9	13.3	0.70	ns	***	ns

SE: standard error; PM: evening; AM: morning

Conclusion

In the fresh herbage, the WSC contents of the herbage were higher in the evening than in the morning for the grass-dominated, but not for the grass–clover-mixture ley. At ensiling, both leys demonstrated higher WSC contents in the herbage cut in the evening. The pH, lactic acid and acetic acid were influenced by the cutting time and type of ley, but only the cutting time influenced aerobic stability. The lower DM-content and higher acetic acid content were partly responsible for this results.