

The Effect of Different Moisture, Raining, & Additives on Fermentation Quality of Alfalfa Silage

Jinze Bao¹, Xiao Chen¹, Zhu Yu¹

Keywords: alfalfa silage; raining; fermentation quality

In this experiment, the effects of water content of different raw materials, rain and additives on the fermentation quality of alfalfa silage were investigated. The alfalfa was harvested at the budding stage, with 2 water contents (50% and 70%), whether it was rained or not, and 3 additives: *Lactobacillus plantarum* (LP), formic acid (FA), and *Lactobacillus plantarum* + sucrose (LP+S). The results showed that the ammonia nitrogen content of 50% moisture alfalfa silage was lower than that of 70% moisture alfalfa silage without rain and additives. When not exposed to rain, the use of additives all made the two-moisture alfalfa silage obtain good fermentation quality. Among them, the treatment effect of *Lactobacillus plantarum* + sucrose was the best.

Table 1. The effects of different treatments on the fermentation characteristics of alfalfa silage.

Moisture content	Raining time (h)	Additives	pH	AN/TN	LA	AA	PA	BA
					%DM			
52.78%	0	CK	5.29bc	9.13c	2.82d	1.41c	0.96abc	0.01c
		FA	4.71cd	2.07c	3.72d	1.92bc	0.78abc	0.01c
		LP+S	4.19d	0.69c	7.41bc	2.62abc	0.77abc	0.01c
	3	CK	7.49a	75.00a	0.11d	3.69abc	1.58a	3.25b
		FA	5.41bc	28.42b	3.99d	4.60a	0.52c	1.84bc
		LP+S	4.19d	2.13c	9.14b	2.64abc	0.44c	0.02c
67.43%	0	CK	4.90cd	7.03c	6.09c	2.21bc	1.56ab	0.03c
		FA	4.12d	0.99c	6.96c	2.17bc	0.89abc	0.02c
		LP+S	4.01d	0.72c	9.56b	2.28bc	0.72bc	0.02c
	3	CK	5.88b	35.22b	0.00d	3.91ab	1.14abc	6.09a
		FA	5.18bc	5.84c	6.30c	2.75abc	0.70c	2.24b
		LP+S	4.16d	2.27c	13.01a	3.52abc	0.86abc	0.00c

Note: Values in same row with different lower case letters show significant differences among treatments at 0.05 level ($P < 0.05$).

¹College of Grassland Science and Technology, China Agricultural University, Beijing, 100193, China.