

**Table S1.** The chemical composition of paper mulberry silage

Item <sup>1</sup>	DM, as-fed basis	NDF	ADF	CP
Content, %	20.4	43.1	33.5	16.9

<sup>1</sup> DM: dry matter, NDF: neutral detergent fiber, ADF: acid detergent fiber, CP: crude protein.

**Table S2.** Effects of paper mulberry silage on apparent total tract digestibility of dairy cow.

Item <sup>1</sup>	Period	Treatment <sup>2</sup>			SEM	<i>p</i> -value
		CON	PM1	PM2		
DM, %	I	70.9	70.1	69.3	2.7	0.97
	II	72.1	72.1	71.1	1.5	0.94
NDF, %	I	68.9	69.0	69.0	1.2	0.53
	II	61.4	59.5	57.8	1.1	0.19
ADF, %	I	53.5	50.4	51.3	1.1	0.77
	II	50.3	50.4	50.3	1.7	0.77
CP, %	I	73.6	74.4	72.6	1.5	0.39
	II	72.0	71.7	71.1	1.8	0.19

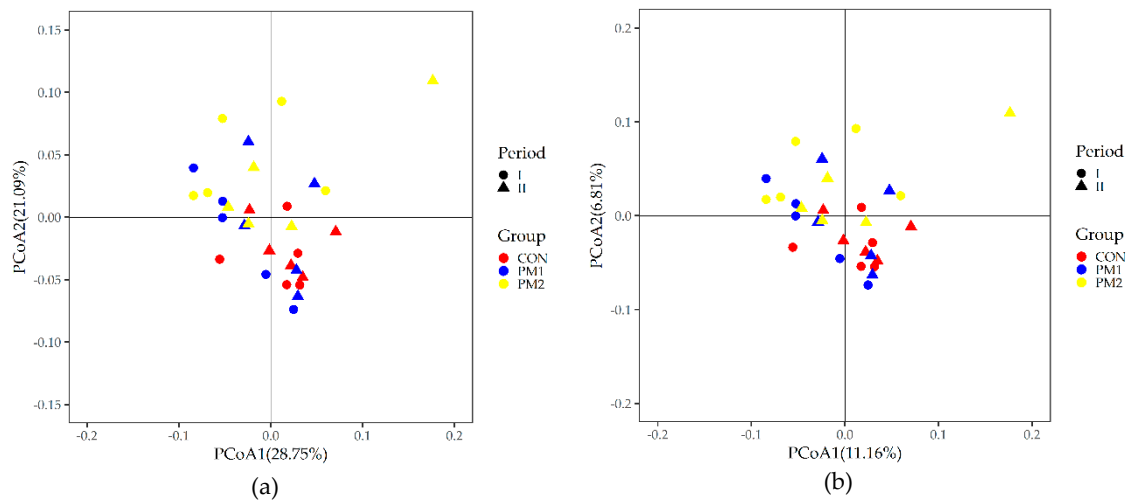
<sup>1</sup> DM: dry matter, NDF: neutral detergent fiber, ADF: acid detergent fiber, CP: crude protein.

<sup>2</sup> CON: the control group fed none paper mulberry silage diet; PM1 and PM2: the treatment groups fed 4.5 and 9.0% paper mulberry silage supplementary diet during the period I. Then, treatment groups fed 13.5 and 18.0% paper mulberry silage during the second period, respectively. Period I, the first 28 days; Period II, the second 28 days.

**Table S3.** Effects of paper mulberry silage on the feces microbial OUT, richness and diversity of cows

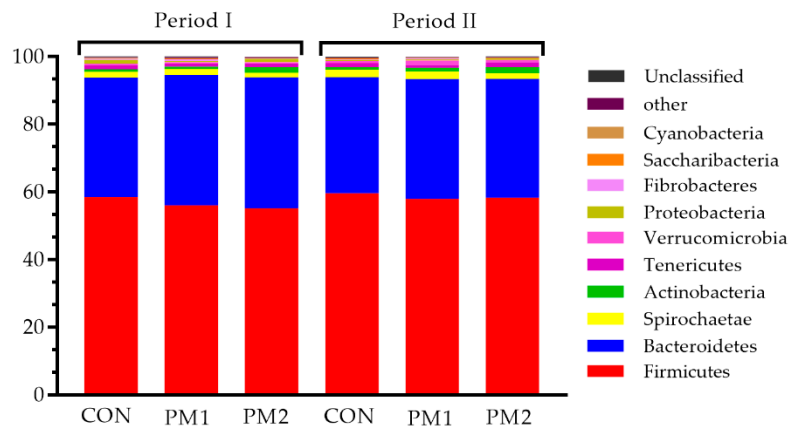
Items	Period	Treatment			SEM	<i>p</i> -values
		CON	PM1	PM2		
OTU number	I	1979.8	2023.2	1958.8	15.7	0.60
	II	2111.0	2093.8	1981.2	33.1	0.35
Richness estimate						
Chao1	I	2477.7	2609.9	2638.8	40.4	0.12
	II	2678.3	2708.2	2582.7	30.9	0.52
Ace	I	2422.2	2555.4	2584.5	40.8	0.11
	II	2624.2	2651.6	2554.0	23.6	0.60
Diversity indices						
Shannon	I	8.1	8.2	7.8	0.1	0.07
	II	8.2	8.0	7.9	0.1	0.34
Simpson	I	1.0	1.0	1.0	<0.1	0.11
	II	1.0	1.0	1.0	<0.1	0.42

CON: the control group fed none paper mulberry silage diet; PM1 and PM2: the treatment groups fed 4.5 and 9.0% paper mulberry silage supplementary diet during the period I. Then, treatment groups fed 13.5 and 18.0% paper mulberry silage during the second period, respectively. Period I, the first 28 days; Period II, the second 28 days.



**Fig. S1.** Weighted (a) and unweighted (b) principal coordinate analysis (PCoA) illustrating relationships among fecal bacterial populations in cows fed different diets

CON: the control group fed none paper mulberry silage diet; PM1 and PM2: the treatment groups fed 4.5 and 9.0% paper mulberry silage supplementary diet during the period I. Then, treatment groups fed 13.5 and 18.0% paper mulberry silage during the second period, respectively. Period I, the first 28 days; Period II, the second 28 days.



**Fig. S2.** Fecal bacteria composition at phylum level of dairy cows with different diets

CON: the control group fed none paper mulberry silage diet; PM1 and PM2: the treatment groups fed 4.5 and 9.0% paper mulberry silage supplementary diet during the period I. Then, treatment groups fed 13.5 and 18.0% paper mulberry silage during the second period, respectively. Period I, the first 28 days; Period II, the second 28 days.