

Supplementary Materials

Table S1: Measured methane yields (L/kg-VS) at F/I ratio of 2 from biomass cut to 2.54 cm or 1.27 cm lengths.

TS	2.54-cm biomass			1.27-cm biomass		
	1 st harvest	2 nd harvest	3 rd harvest	1 st harvest	2 nd harvest	3 rd harvest
4%	2.10±0.20	45.74±0.20	172.26±5.65	2.21±2.07	22.53±7.12	123.99±0.52
6%	3.20±0.15	34.89±1.22	89.57±1.94	0.30 ±0.21	2.94±2.61	92.39±19.57
8%	4.30±0.21	20.83±0.48	65.93±5.79	0.39 ±0.26	5.29±4.92	46.06±2.96

Table S2: Measured methane yields (L/kg-VS) from biomass cut into 2.54-cm lengths.

Inoculation rate F/I= 1			After alkali pretreatment and ensiling		
1 st harvest	2 nd harvest	3 rd harvest	1 st harvest	2 nd harvest	3 rd harvest
1.89±0.20	50.66±2.30	202.00±2.17	5.65±1.42	270.42±3.10	193.86±21.16

Table S3: Characteristics of AD digestate after alkali pretreatment and ensiling.

Composition	1 st harvest	2 nd harvest	3 rd harvest
pH	5.47 ±0.09	7.96±0.01	8.03±0.06
Alkalinity, mg/L CaCO ₃	3,640±43	4,677±82	4,687±89