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Feedstock Balancing for Superior Biomethane and A Pathway to Sustainable Waste Valorization: Goat Manure and Rice Husk Co-Digestion under Anaerobic Digestion

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Table S1 First-order kinetic model parameters of GM and RH

GM: RH	G_o (mL/gvs)	CMY (mL/gvs)	k (d^{-1})	R^2	RMSE
100:0	643.2	245.1	0.008	0.980	11.498
90:10	799.5	233.6	0.005	0.976	12.152
80:20	498.2	204.4	0.008	0.973	10.885
70:30	863.5	221.2	0.004	0.986	8.415
60:40	598.3	223.8	0.007	0.983	8.992
50:50	551.3	205.7	0.007	0.972	10.004
40:60	902.8	191.9	0.003	0.980	8.127
30:70	325.1	232.5	0.017	0.690	30.054
20:80	1553.5	211.8	0.002	0.711	27.666
10:90	138.2	145.0	0.035	0.554	20.053
0:100	62.4	64.4	0.444	0.842	3.939

Table S2 Gompertz kinetic model parameters of GM and RH

GM: RH	G_o (mL/gvs)	CMY (mL/gvs)	R_{max}	R^2	λ (d)	RMSE
100:0	255.2	248.8	6.22	0.995	6.114	5.823
90:10	243.1	236.6	5.96	0.993	6.977	6.310
80:20	214.2	208.0	4.91	0.983	4.994	8.668
70:30	235.8	224.3	5.05	0.991	5.071	6.831
60:40	239.7	226.7	4.84	0.986	3.042	8.247
50:50	225.7	205.8	3.84	0.978	-0.185	8.855
40:60	215.3	195.1	3.65	0.980	1.442	8.076
30:70	270.0	234.2	2.60	0.827	-20.145	22.439
20:80	352.3	214.4	2.47	0.835	-12.444	20.905
10:90	160.9	147.8	1.90	0.778	-18.000	14.128
0:100	63.8	67.5	17.24	0.787	0.000	4.654

Table S3 Biodegradability, Synergetic Effect Index, and C/N ratio of GM and RH co-digestions

GM:RH	EMY ($\frac{mL}{g_{VS}}$)	TMY ($\frac{mL}{g_{VS}}$)	BD (%)	SEI (%)	C/N ratio
100:0	245.1	335.0	73.1	100/0	21.3
90:10	233.6	331.6	70.4	102.9	23.0
80:20	204.4	328.1	62.2	97.7	25.1
70:30	221.1	324.7	68.0	115.7	27.7
60:40	223.8	321.3	69.6	129.4	30.8
50:50	205.7	317.9	64.7	132.9	34.8
40:60	191.9	314.5	61.0	140.3	40.2
30:70	232.5	311.1	74.7	195.9	47.4
20:80	211.8	307.7	68.8	210.5	58.1
10:90	145.0	304.2	47.6	175.7	75.3
0:100	64.4	300.8	21.4	100.0	107.3

Table S4 Effluent final pH

GM:RH	Effluent final pH
100:0	6.88 ± 0.13
90:10	7.03 ± 0.11
80:20	6.89 ± 0.37
70:30	6.93 ± 0.28
60:40	7.01 ± 0.38
50:50	7.01 ± 0.32
40:60	7.16 ± 0.39
30:70	6.97 ± 0.27
20:80	6.99 ± 0.32
10:90	6.99 ± 0.23
0:100	6.74 ± 0.23