Table S1. Calculated proximate composition of the experimental substrates (% as fed-basis).

	SD0	SD25	SD50	SD75	SD100
			Proximate composition		
Moisture	84.8	81.0	77.3	73.5	69.7
Crude protein	4.6	7.4	10.2	13.1	15.9
Crude lipid	5.1	7.7	10.3	12.8	15.4
Ash	1.7	2.1	2.6	3.1	3.5
Crude fiber	3.5	2.7	1.8	1.0	0.2

BSFL, Black soldier fly larvae; SD, sardine

SD0, SD25, SD50, SD75, and SD100 represent substrates with 0, 25, 50, 75, and 100% SD inclusion in FW-based substrates, respectively.

Table S2. Alpha diversity of intestinal bacterial communities of Black soldier fly larvae

Experimental groups	Observed features	Faith pd	Chao1	Evenness	Shannon
SD0	79±5.20	12.78±3.34	80.67±6.81	0.44±0.04	2.79±0.29
SD25	88.33±22.03	13.74±4.65	88.67±22.01	0.44±0.03	2.85±0.11
SD100	88±15.39	16.1±1.90	88±15.39	0.48±0.07	3.07±0.49
p-value	0.510	0.302	0.574	0.460	0.355

Values are the mean of triplicate groups and presented as mean ± SE. The absence of superscript letters indicates no significant differences among treatments.

BSFL, Black soldier fly larvae; SD, sardine

SD0, SD25, SD50, SD75, and SD100 represent substrates with 0, 25, 50, 75, and 100% SD inclusion in FW-based substrates, respectively.