

Table S1. Least-square means of amount of thermophilic aerobic sporeformers (TAS; log10 cfu/g bedding material) and TAS concentration by season, lactation status and compost-bedded pack barn (CBP) group (standard errors in brackets).

Trait	Season				Lactation status		CBP group			
	Spring	Summer	Autumn	Winter	Dry	Lactating	1	2	3	4
Amount of TAS	3.79 ^a (0.26)	3.62 ^a (0.37)	3.79 ^a (0.26)	5.31 ^b (0.31)	4.37 (0.42)	4.00 (0.28)	4.39 (0.43)	3.72 (0.50)	3.64 (0.61)	4.37 (0.43)
<i>Aneurinibacillus thermoaerophilus</i>	7.14 (5.11)	0.00 (7.23)	0.00 (5.11)	10.90 (5.90)	8.17 (5.10)	3.17 (3.40)	0.00 (5.17)	9.52 (5.97)	0.00 (7.31)	8.17 (5.17)
<i>Bacillus licheniformis</i>	80.74 (11.46)	65.63 (16.21)	72.92 (11.46)	62.61 (13.23)	72.33 (11.06)	71.59 (7.37)	75.00 (11.30)	59.23 (13.05)	83.33 (15.99)	72.33 (11.30)
<i>Geobacillus thermodenitrificans</i>	0.00 (3.61)	12.50 (5.11)	0.00 (3.61)	5.13 (4.17)	3.85 (4.08)	2.78 (2.72)	0.00 (4.06)	8.33 (4.69)	0.00 (5.75)	3.85 (4.06)
<i>Laceyella sacchari</i>	5.49 (6.56)	0.00 (9.28)	8.33 (6.56)	18.80 (7.58)	9.18 (6.82)	8.33 (4.55)	10.42 (6.84)	0.00 (7.90)	16.67 (9.67)	9.18 (6.84)
<i>Thermoactinomyces vulgaris</i>	6.63 (7.88)	21.88 (11.15)	15.63 (7.88)	0.00 (9.10)	4.55 (7.98)	12.73 (5.32)	11.46 (7.75)	22.92 (8.95)	0.00 (10.96)	4.55 (7.75)
<i>Ureibacillus thermosphaericus</i>	0.00 (2.09)	0.00 (2.95)	3.13 (2.09)	2.56 (2.41)	1.92 (2.04)	1.39 (1.36)	3.13 (2.12)	0.00 (2.45)	0.00 (3.00)	1.92 (2.12)

^{a, b} Different letters represent significant differences ($P < 0.05$).

Table S2. Regression coefficients of days between complete renewal of bedding and sample date (Days), moisture content (Mc), bedding temperature (Tbed), temperature 1.30 m (Thigh) and 0.10 m (Tdown) above bedding material, relative humidity 1.30 m (RHhigh) and 0.10 m (RHdown) above bedding material, ambient temperature (Tamb), and bedded area/cow on amount of thermophilic aerobic sporeformers (TAS) and TAS concentrations (standard errors in brackets).

Trait	Days	Mc	Tbed	Thigh	RHhigh	Tdown	RHdown	Tamb	Bedded area/cow
Amount of TAS	-0.01 (0.00)	-0.08* (0.03)	-0.03 (0.02)	-0.03 (0.03)	0.03* (0.01)	-0.03 (0.03)	0.04* (0.01)	-0.03 (0.02)	0.05 (0.06)
<i>Aneurinibacillus thermoaerophilus</i>	0.01 (0.04)	0.50 (0.42)	-0.49 (0.22)	-0.18 (0.32)	-0.04 (0.16)	-0.19 (0.33)	-0.06 (0.17)	-0.13 (0.30)	1.28 (0.68)
<i>Bacillus licheniformis</i>	0.00 (0.08)	1.33 (0.84)	0.04 (0.56)	-0.20 (0.69)	-0.25 (0.34)	-0.21 (0.69)	-0.24 (0.36)	-0.08 (0.64)	-0.02 (1.65)
<i>Geobacillus thermodenitrificans</i>	0.03 (0.03)	-0.12 (0.34)	-0.05 (0.21)	0.43 (0.22)	-0.01 (0.13)	0.44 (0.22)	-0.03 (0.13)	0.37 (0.21)	-0.12 (0.61)
<i>Laceyella sacchari</i>	-0.08 (0.04)	-0.90 (0.51)	0.00 (0.35)	-0.45 (0.40)	0.44* (0.17)	-0.46 (0.41)	0.46* (0.18)	-0.47 (0.37)	-0.12 (1.02)
<i>Thermoactinomyces vulgaris</i>	0.06 (0.06)	-0.44 (0.68)	0.39 (0.40)	0.50 (0.49)	-0.23 (0.25)	0.52 (0.50)	-0.23 (0.26)	0.42 (0.46)	-1.00 (1.19)
<i>Ureibacillus thermosphaericus</i>	-0.02 (0.01)	-0.38* (0.13)	0.10 (0.10)	-0.10 (0.12)	0.09 (0.06)	-0.10 (0.13)	0.10 (0.06)	-0.11 (0.11)	-0.02 (0.31)

* Significant regression coefficient ($P < 0.05$).