

Appendix

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for the paper entitled

Calculation approaches for gaseous and odour emissions and the impact of a urease inhibitor in fattening pig houses

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Table A1: Average hourly compartment temperature (°C), ventilation rate (m³ h⁻¹ animal⁻¹), livestock unit (LU) and compartment humidity (ppm) in the pre phase across all experimental periods for each farm (mean ± standard deviation)

Parameter	Treatment	Farm 1	Farm 2	Farm 3
Compartment temperature (°C)	Control	20.5 ± 1.7	20.5 ± 1.0	25.3 ± 2.1
	UI-application	20.5 ± 1.8	20.8 ± 1.3	25.4 ± 2.1
Ventilation rate (m ³ h ⁻¹ animal ⁻¹)	Control	39.3 ± 19.9	43.6 ± 17.5	55.8 ± 48.2
	UI-application	39.8 ± 20.6	50.0 ± 20.8	58.1 ± 51.7
Livestock unit (LU)	Control	16.3 ± 2.3	11.5 ± 3.1	4.9 ± 1.5
	UI-application	16.3 ± 2.7	12.6 ± 3.1	4.7 ± 1.4
Compartment humidity (%)	Control	66.0 ± 4.1	53.8 ± 7.6	57.9 ± 5.0
	UI-application	65.8 ± 3.6	52.1 ± 6.7	60.8 ± 6.8

Table A2: Instrument-specific detection and determination limits of the FTIR of carbon dioxide, ammonia, methane and nitrous oxide emissions (ppm)

	Detection limit (ppm)	Quantification limit (ppm)
Carbon dioxide	<1	6
Ammonia	<0.05	0.2
Methane	<0.05	0.3
Nitrous oxide	<0.2	0.4

Table A3: Comparison of the average daily carbon dioxide, ammonia and methane emissions in relation of the reference phase of treatments with the control in the application phase

Comparison	Reduction Effect in %	Estimate	Std. Error	Adj P	Adj. lower 95 % confidence limit	Adj. upper 95 % confidence limit
carbon dioxide: backpack sprayer: application day 2-3: 50 mg m ⁻² – control	-3.19	-0.0319	0.0150	0.0626 (n.s.)	-0.0654	0.0015
ammonia: backpack sprayer: application day 2-3: 50 mg m ⁻² – control	-23.54	-0.2354	0.0089	< 0.0001	-0.2555	-0.2153
methane: backpack sprayer: application day 2-3: 50 mg m ⁻² – control	-0.41	-0.0041	0.0330	0.9830 (n.s.)	-0.0764	0.0682

Table A4: Average hourly carbon dioxide, ammonia, methane and odour emissions across all farms and experimental periods for the pre-phase and application phase in control and UI application compartments (mean \pm standard deviation)

Emission (Unit)	Farm 1				Farm 2				Farm 3			
	Control		UI application		Control		UI application		Control		UI application	
Phase	Pre-phase	Application phase	Pre-phase	Application phase	Pre-phase	Application phase	Pre-phase	Application phase	Pre-phase	Application phase	Pre-phase	Application phase
Carbon dioxide (g h ⁻¹ LU ⁻¹)	370 \pm 72	385 \pm 87	370 \pm 77	379 \pm 74	604 \pm 116	602 \pm 127	620 \pm 109	604 \pm 121	554 \pm 120	540 \pm 95	588 \pm 151	551 \pm 128
Ammonia (g h ⁻¹ LU ⁻¹)	1.7 \pm 0.3	1.7 \pm 0.3	1.7 \pm 0.3	1,4 \pm 0.2	2.2 \pm 0.2	2.3 \pm 0.3	2.3 \pm 0.7	1.8 \pm 0.5	3.0 \pm 0.8	2.8 \pm 0.7	3.1 \pm 1.2	2.2 \pm 0.7
Methane (g h ⁻¹ LU ⁻¹)	11.2 \pm 1.8	10.8 \pm 2.7	11.4 \pm 2.8	10.8 \pm 2.7	6.6 \pm 2.4	6.7 \pm 2.3	8.9 \pm 4.1	8.8 \pm 3.7	13.1 \pm 6.1	14.8 \pm 7.8	11.7 \pm 6.1	11.9 \pm 6.9
	n=144	n=269	n=143	n=273	n=144	n=283	n=143	n=283	n=96	n=192	n=96	n=181
Odour (GE s ⁻¹ LU ⁻¹)		81 \pm 31		88 \pm 36		83 \pm 75		81 \pm 67				
		n=16		n=16		n=14		n=14				