

APPENDICES

APPENDIX I

Equations derived from data analysed with constraints from the homogeneity tests in the Field Survey.

Equation		R ²	RSD
DRC			
Zone 1 + Zone 2:-	n=672 groups		
vs month	*** * - 2 Y=529.16+17.113X-1.1351X	0.007	180.45
vs Max. (°C)	*** *** Y=836.16-10.444X	0.102	171.44
vs Min. (°C)	heterogeneity		
vs Mean(°C)	*** *** Y=756.74-9.9980X	0.079	173.66
	*** *** * 2 *** 3 Y=1716.33-205.94X+12.445X-0.29811X	0.114	170.60
Zone 1	n=394 groups		
vs Month	N.S. and Heterogeneity		
vs Max. (°C)	*** *** Y=892.06-12.490X	0.098	160.24
vs Min. (°C)	*** *** Y=692.75-9.7514X	0.076	162.11
	*** *** *** 2 *** 3 Y=1205.2-181.09X+16.462X-0.47543X	0.158	155.21
vs Mean(°C)	*** *** Y=787.50-11.349X	0.089	161.02
	*** *** *** 2 *** 3 Y=4620.4-697.22X+39.322X-0.72561X	0.179	153.20

APPENDIX I (Cont.)

	Equation	R ²	RSD
Zone 2	n=278 groups		
vs Month	N.S.		
	*** ***		
vs Max.(° C)	Y=808.60-9.5431X	0.112	186.21
	*** *** *** 2 *** 3 Y=3246.9-361.40X+15.929X-0.22536X	0.198	177.63
	*** *** *** 2		
vs Min.(° C)	Y=439.53+45.048X-2.5648X	0.081	189.73
	*** *** *** 2 *** 3		
vs Mean(° C)	Y=1776.7-232.73X+14.731X-0.30111X	0.130	184.92
FCR			
Zone 1 + Zone 2:-	n=199 groups		
vs Month	N.S. and heterogeneity		
	*** * * 2		
vs Max.(° C)	Y=3.3146-0.05218X+0.00119X	0.023	0.189
vs Min.(° C)	N.S.		
	*** * * 2		
vs Mean(° C)	Y=3.1562-0.05258X+0.00165X	0.023	0.189
Zone 1:-			
	n=127 groups		
vs Month	Heterogeneity		
	*** **		
vs Max.(° C)	Y=2.5012+0.01108X	0.062	0.173
	*** **		
vs Min.(° C)	Y=2.6724+0.00872X	0.058	0.173
	*** **		
vs Mean(° C)	Y=2.5893+0.01022X	0.062	0.173

APPENDIX I (Cont.)

Equation	R^2	RSD
P2		
Zone 1 + Zone 2 + Zone 3:- n=437 groups		
vs Month N.S. and heterogeneity		
*** **		
vs Max.(° C) Y=18.228-0.06681X	0.019	2.60
*** * * 2 * 3 Y=37.528-2.7141X+0.12142X-0.00178X	0.034	2.59
vs Min.(° C) N.S.		
*** *		
vs Mean(° C) Y=18.680-0.05920X	0.012	2.61
*** ** ** 2 ** 3 Y=32.882-2.9161X+0.17920X-0.00354X	0.034	2.59
Zone 1:- n=293 groups		
*** ***		
vs Month Y=18.071-0.17661X	0.068	2.14
vs Max.(° C) N.S.		
vs Min.(° C) N.S.		
vs Mean(° C) N.S.		

APPENDIX II

Results of regression of biological parameters of pigs from various farms against time (month) and ambient temperatures (Field Survey).

Equation		R ²	RSD
Kingaroy, Queensland:- n=46 groups			
	DRG		
vs Month	N.S.		
vs Max.(° C)	N.S.		
vs Min.(° C)	N.S.		
vs Mean(° C)	N.S.		
	FCR		
vs Month	*** * ** 2 Y=3.3887-0.17643X+0.01054X	0.313	0.184
vs Max.(° C)	*** ** Y=2.2623+0.02089X	0.152	0.202
vs Min.(° C)	*** ** Y=2.5788+0.01909X	0.195	0.197
vs Mean(° C)	*** ** Y=2.4240+0.02016X	0.176	0.199
	P2		
vs Month	*** ** 2 ** 3 Y=3.5689+7.3946X-1.0911X+0.04677X	0.349	2.12
vs Max.(° C)	N.S.		
vs Min.(° C)	* * * 2 * 3 Y=8.1107+3.4755X-0.36336X+0.01116X	0.146	2.43
vs Mean(° C)	N.S.		

APPENDIX II (Cont.)

	Equation	R ²	RSD
Toowoomba, Queensland	n=21 groups		
	DRG		
vs Month	N.S.		
vs Max.(° C)	*** ** ** 2 $Y=749.04 - 27.174X + 0.58916X^2$	0.424	11.68
vs Min.(° C)	*** * * 2 $Y=511.88 - 12.971X + 0.56818X^2$	0.361	12.31
vs Mean(° C)	*** ** * 2 $Y=615.89 - 20.711X + 0.59878X^2$	0.411	11.82
	P2		
vs Month	*** * $Y=15.613 - 0.13651X$	0.192	0.911
vs Max.(° C)	N.S.		
vs Min.(° C)	N.S.		
vs Mean(° C)	N.S.		
Warwick, Queensland	n=81 groups		
	DRG		
vs Month	*** *** $Y=780.37 + 7.6465X$	0.171	58.55
vs Max.(° C)	*** * $Y=924.80 - 4.1772X$	0.066	62.13
vs Min.(° C)	*** * $Y=862.74 - 3.3066X$	0.063	62.25
	*** ** ** 2 ** 3 $Y=731.77 + 52.565X - 6.3246X^2 + 0.20790X^3$	0.159	59.73
vs Mean(° C)	*** * $Y=893.66 - 3.9006X$	0.068	59.73

APPENDIX II (Cont.)

	Equation	R ²	RES
FCR			
vs Month	*** * Y=2.8274-0.01119X	0.064	0.148
vs Max.(°C)	N.S.		
vs Min.(°C)	N.S.		
vs Mean(°C)	N.S.		
P2			
vs Month	*** * + 2 * 3 Y=23.010-2.5130X+0.42844X-0.02294X	0.216	2.47
vs Max.(°C)	N.S. (approaching significant)		
vs Min.(°C)	N.S.		
vs Mean(°C)	N.S.		
Gatton, Queensland	n=145 groups		
DRG			
vs Month	*** ** * 2 *** 3 Y=495.31-26.831X+5.5196X-0.28869X	0.134	30.56
vs Max.(°C)	N.S.		
vs Min.(°C)	N.S.		
vs Mean(°C)	N.S.		
P2			
vs Month	*** * + 2 Y=17.197-0.28234X+0.01829X	0.045	1.09
vs Max.(°C)	*** * Y=15.059+0.04778X	0.031	1.09

APPENDIX II (Cont.)

	Equation	R ²	RSD
vs Min. (°C)	*** * Y=15.693+0.05098X	0.045	1.08
vs Mean(°C)	*** * Y=15.341+0.05062X	0.039	1.08

Brisbane, Queensland n=172 individuals (porkers)

	DRG		
vs Month	*** * ** 2 Y=386.50-8.7738X+0.82350X	0.083	37.73
	*** ** ** 2 * 3 Y=416.34-32.599X+5.2627X-0.22844X	0.115	37.18
vs Max.(°C)	N.S.		
vs Min.(°C)	N.S.		
vs Mean(°C)	- * * 2 * 3 Y=-1915.9+359.47X-18.475X+0.31126X	0.037	38.78

	P2		
vs Month	*** *** *** 2 *** 3 Y=20.140-2.1908X+0.38422X-0.01906X	0.077	2.12
vs Max.(°C)	N.S.		
vs Min.(°C)	N.S.		
vs Mean(°C)	N.S.		

Murwillumbah 1, N.S.W. n=50 groups

	DRG		
vs Month	*** *** *** 2 Y=430.37+12.777X-0.93058X	0.237	20.19
vs Max.(°C)	*** ** Y=534.09-2.4621X	0.173	20.79

APPENDIX II (Cont.)

	Equation	R ²	RSD
vs Min. (° C)	Y=501.49-2.0745X	0.133	21.29
vs Mean(° C)	Y=520.97-2.4392X	0.164	20.91
Murwillumbah, N.S.W.	n=51 groups		
	DRG		
vs Month	Y=468.10-2.1860X	0.161	19.11
vs Max.(° C)	Y=381.00+2.4600X	0.116	19.61
vs Min.(° C)	N.S.		
vs Mean(° C)	Y=403.82-2.0469X	0.095	19.84
Pine Ridge, N.S.W.	n=63 groups		
	DRG		
vs Month	Y=364.96+9.6992X-0.70277X ²	0.141	21.65
vs Max.(° C)	Y=428.84-1.4682X	0.147	21.59
vs Min.(° C)	Y=406.88-1.6400X	0.155	21.48
vs Mean(° C)	Y=418.59-1.5555X	0.152	21.53
Temora, N.S.W.	n=53 groups		
	DRG		
vs Month	Y=709.36-80.348X+13.147X ² -0.58790X ³	0.535	27.62
vs Max.(° C)	Y=558.67+1.9516X	0.102	27.64

APPENDIX II (Cont.)

	Equation	R ²	RESD
vs Min.(°C)	N.S.		
vs Mean(°C) Y=570.63+2.0160X	*** * 0.087	37.96	
Grono Grono, N.S.W.	n=34 groups		
	DRG		
vs Month Y=673.41-4.4145X	*** ** 0.200	32.98	
vs Max.(°C) Y=816.91-18.455X+0.42720X ²	*** * * 0.211	33.07	
vs Min.(°C)	N.S.		
vs Mean(°C) Y=739.76-16.144X+0.53914X ²	*** - * * 0.215	33.19	
Corowa 1, N.S.W.	n=39 groups		
	DRG		
vs Month	N.S.		
vs Max.(°C)	N.S.		
vs Min.(°C)	N.S.		
vs Mean(°C)	N.S.		
Corowa 2, N.S.W.	n=40 groups		
	DRG		
vs Month	N.S.		
vs Max.(°C)	N.S.		
vs Min.(°C)	N.S.		
vs Mean(°C)	N.S.		

APPENDIX II (Cont.)

Equation	R ²	RSD
Corowa 3, N.S.W.	n=30 groups	
vs Month	N.S.	DRG
vs Max. (°C)	N.S.	
vs Min. (°C)	N.S.	
vs Mean(°C)	N.S.	
Bendigo, Victoria.	n=72 groups	
vs Month	Y=866.10+13.711X-1.2425X ²	0.213 30.62
	Y=816.75+51.851X-8.2922X+0.36152X ² -0.0003X ³	0.303 28.60
vs Max. (°C)	Y=929.65-2.0291X	0.122 32.10
	Y=1049.7-14.722X+0.30857X ²	0.175 31.35
vs Min. (°C)	Y=912.05-2.7012X	0.082 32.83
vs Mean(°C)	Y=922.55-2.3474X	0.106 32.39
vs Month	Y=2.9506-0.24764X+0.05309X ² -0.00280X ³	0.401 0.166
vs Max. (°C)	N.S.	FCR
vs Min. (°C)	Y=2.9393-0.01582X	0.074 0.203
vs Mean(°C)	Y=2.9523-0.01047X	0.056 0.205

APPENDIX II (Cont.)

Equation	R ²	RED
P2		
vs Month	N.S.	
vs Max. (°C)	N.S.	
vs Min. (°C)	N.S.	
vs Mean(°C)	N.S.	
Tasmania	n=72 groups	
P2		
*** → * 2 * 3		
vs Month Y=29.155-2.0752X+0.36891X ² -0.01837X ³	0.073	2.13
vs Max. (°C)	N.S.	
vs Min. (°C)	N.S.	
vs Mean(°C)	N.S.	

APPENDIX III

Result of canonical analyses of biological parameters with month, maximum and minimum temperatures in the pooled data from the Field Survey.

Bio. Parameters	R^2	Canonical Coefficient		
		Month	Max. T.	Min. T.
DRG				
Zone 1 + Zone 2	P<0.01	0.01613	-1.90024	1.11621
Zone 1	P<0.01	-0.05595	-1.32985	0.35447
Zone 2	P<0.01	0.05515	-2.93660	2.51030
FCR				
Zone 1 + Zone 2	N.S.	0.55613	-2.00182	2.33927
Zone 1	P<0.01	-0.80153	0.77737	-0.45410
P2				
Zone1 + Zone2 + Zone3	P<0.01	-0.63023	-2.40849	0.75073
Zone 1	P<0.01	-1.09161	0.11179	-0.37368

APPENDIX IV

Results of canonical analyses of the biological parameters with month, maximum and minimum ambient temperatures of pigs from various farms in the Field Survey.

Bio. Parameters	R^2	Canonical Coefficient		
		Month	Max. T.	Min. T.
Kingaroy, Queensland				
DRG	N.S.	0.12265	2.86431	-3.58866
FCR	P<0.01	0.11034	-3.60517	4.46202
P2	N.S.	-1.30561	1.03437	-1.79198
Toowoomba, Queensland				
DRG	N.S.	0.04796	-0.57774	-0.44077
P2	N.S.	-0.97161	0.73136	-0.31154
Warwick, Queensland				
DRG	P<0.01	1.03497	-0.34112	0.38495
FCR	N.S.	-1.12434	0.94942	-1.31944
P2	P<0.01	-1.18579	0.58711	-0.96765
Gatton, Queensland				
DRG	P<0.01	0.38908	2.21859	-2.52082
P2	P<0.05	-0.01531	1.70159	-2.52967
Brisbane, Queensland				
DRG	P<0.01	0.53170	3.88510	-3.61911
P2	N.S.	-0.91250	7.28127	-7.59103
Murwillumbah 1, N.S.W.				
DRG	P<0.05	0.06298	-0.54778	-0.44502
Murwillumbah 2, N.S.W.				
DRG	P<0.05	-0.36180	-3.68194	3.47443
Pine Ridge, N.S.W.				
DRG	p<0.05	-0.07147	1.35909	-2.37747

APPENDIX IV (Cont.)

Bio. Parameters	χ^2	Canonical Coefficient		
		Month	Max. T.	Min. T.
Temora, N.S.W.				
DRG	P<0.01	0.36889	3.47931	-2.37747
Grong Grong, N.S.W.				
DRG	P<0.05	-0.43355	-4.05766	4.51977
Corowa 1, N.S.W.				
DRG	N.S.	1.04004	0.40806	-0.09023
Corowa 2, N.S.W.				
DRG	N.S.	0.81501	4.15415	-4.00312
Corowa 3, N.S.W.				
DRG	N.S.	0.96212	-1.11892	1.38536
Bendigo, Victoria.				
DRG	P<0.01	0.09876	-8.13289	7.65551
FCR	P<0.01	0.26239	5.83576	-6.19647
P2	N.S.	-0.04900	8.05831	-8.42414
Tasmania.				
P2	N.S.	-0.24875	9.34531	-8.74241

APPENDIX V

Results of regression of biological parameters of pigs in Field Experiments 2 and 3 against maximum, minimum and mean shed temperatures.

Parameters	Equation	n	R ²	RSD
Field Experiment 2				
DFI vs				
Max.(° C)	Y=6560.2-324.73X+5.6886X ²	47	0.104	188.30
Min.(° C)	Y=3978.6-239.30X+6.9748X ²	47	0.126	185.96
Mean(° C)	Y=5435.5-305.93X+6.6826X ²	47	0.129	185.63
DRG vs				
Max.(° C)	N.S.			
Min.(° C)	N.S.			
Mean(° C)	N.S.			
FCR vs				
Max.(° C)	N.S.			
Min.(° C)	Y=3.8258-0.02882X ^{***} Y=5.8453-0.27823X+0.00744X [*]	47	0.126	0.225
Mean(° C)	Y=8.4750-0.45097X+0.00970X ^{***} ^{**} ^{**}	47	0.217	0.215
P2 vs				
Max.(° C)	N.S.			
Min.(° C)	N.S.			
Mean(° C)	Y=177.65-21.935X+0.99278X [*] Y=-0.01475X ² Y=1.298X ³	47	0.128	1.298
Dress % vs				
Max.(° C)	Y=13.023+4.5688X-0.08116X [*] ^{**} ²	47	0.145	2.233

APPENDIX V (Cont.)

	Equation	n	R ²	RSD
	$Y = 549.59 - 53.442X + 1.9903X^2 - 0.02443X^3$	47	0.270	2.086
Min. (°C)	$Y = 49.155 + 3.2564X - 0.0942X^2$	47	0.163	2.209
	$Y = 251.16 - 33.510X + 2.0727X^2 - 0.04156X^3$	47	0.342	1.981
Mean (°C)	$Y = 21.571 + 4.9118X - 0.10815X^2$	47	0.224	2.126
	$Y = 299.39 - 32.786X + 1.5722X^2 - 0.02462X^3$	47	0.328	2.000

Field Experiment 3

DFI vs				
Max. (°C)	$Y = 2395.0 - 12.026X$	40	0.194	137.37
Min. (°C)	$Y = 2282.3 - 14.201X$	40	0.145	141.48
Mean (°C)	$Y = 2354.5 - 13.552X$	40	0.179	138.68
DRG vs				
Max. (°C)	$Y = -2038.34 + 313.32X - 12.185X^2 + 0.15385X^3$	40	0.156	54.82
Min. (°C)	N.S.			
Mean (°C)	$Y = -1184.6 + 275.86X - 13.912X^2 + 0.22629X^3$	40	0.137	55.40
FCR vs				
Max. (°C)	N.S.			
Min. (°C)	N.S.			
Mean (°C)	N.S.			

APPENDIX V (Cont.)

	Equation	n	R ²	RSD
P2 vs				
Max.(° C)	N.S.			
Min.(° C) Y=28.667-1.6786X+0.06114X ²	*** ** ** 2	40	0.255	1.742
Mean(° C) Y=30.778-1.3862X+0.03578X ²	*** * * 2	40	0.182	1.825
Dress % vs				
Max.(° C) Y=74.526+0.10254X	*** *	40	0.107	1.662
Min.(° C) Y=74.965+0.15560X	*** *	40	0.132	1.638
Mean(° C) Y=74.600+0.12833X	*** *	40	0.121	1.648

APPENDIX VI

Results of canonical analyses of the biological parameters with treatment, month, maximum and minimum shed temperatures of pigs in Field Experiments 2 and 3.

Biol. Parameter	P ^a	Canonical Coefficient		
		Month	Max. T.	Min. T.
Field Experiment 2				
DPI	P<0.01	0.21381	0.97481	-0.06191
DPS	P<0.01	-0.21683	0.80617	-0.15143
FCR	P<0.01	0.53475	0.14290	0.62771
FC	P<0.05	0.52955	0.75438	0.26636
Press%	N.S.	1.18888	0.04052	-1.56935
Field Experiment 3				
DPI	P<0.05	-1.21778	0.15114	-0.11722
DPS	N.S.	-0.88784	0.84991	-0.23814
FCR	N.S.	-0.23274	-0.79507	0.26097
FC	N.S.	0.93307	0.46291	0.77309
Press%	N.S.	-1.08121	0.46052	0.32620

APPENDIX VII

Daily Rate of Gain (DRG), Dressing Percentage (Dress%), Daily Dry Matter Intake (DMI), Feed Conversion Ratio (FCR), Daily Energy Intake (EI) and Energy Conversion Ratio (ECR) of pigs on different diets and environmental temperature treatments in Laboratory Experiment 1.

Treatment	An.No.	Parameter				
		DRG (g/d)	Dress% (%)	DMI (g/d)	FCR (kg/kg)	EI (MJ/d)
1	6	524.2	72.58	1460	2.79	20.69
	26	442.4	73.28	1310	2.96	18.39
	44	640.8	73.95	1740	2.71	24.80
	46	452.7	70.28	1360	3.01	19.54
	50	452.1	71.74	1310	2.89	19.00
2	2	494.3	75.16	1310	2.64	19.83
	31	626.1	77.96	1970	3.14	28.60
	33	443.7	72.22	1330	3.01	19.52
	36*	N.A.	N.A.	N.A.	N.A.	N.A.
	47	477.9	74.73	1460	2.82	19.55
3	32	616.4	75.22	1560	2.57	22.06
	38	487.5	74.35	1820	3.73	24.82
	41	555.4	72.52	1610	2.91	22.02
	43	570.4	72.28	1480	2.59	19.45
	45	509.4	78.74	1630	3.19	21.39
4	3*	N.A.	N.A.	N.A.	N.A.	N.A.
	4	564.1	73.33	1840	3.26	23.84
	27	568.2	75.00	1710	3.02	22.87
	37	424.7	72.60	1400	3.29	19.25
	42	398.3	74.44	1360	3.42	16.47
5	30	809.3	78.22	2210	2.73	32.63
	34	651.5	77.22	1850	2.84	27.92
	39*	N.A.	N.A.	N.A.	N.A.	N.A.
	48	605.5	75.00	1740	2.81	25.92
	49	799.1	78.49	2220	2.78	32.81
6	1	640.5	77.81	2060	3.22	25.94
	5	801.0	75.56	1970	2.46	24.08
	28	766.6	72.22	2150	2.80	28.15
	29	638.3	73.63	2000	3.14	25.40
	40	605.3	77.09	1990	2.98	26.43

* Leg injuries; excluded from the experiment.

APPENDIX VIII

Apparent Digestibility of Dry Matter (ADM), Protein (ADP) and Energy (ADE), Digestible Energy (DE) and Crude Protein (DCP) of diets given to pigs living in either hot or cold environments in Laboratory Experiment 1.

Treatment	An.No.	Parameter				
		ADM (%)	ADP (%)	ADE (%)	DE (MJ/kg)	DCP (%)
1	6	80.61	75.06	78.65	14.15	22.55
	26	80.55	72.51	78.06	14.04	21.78
	44	81.70	73.23	79.44	14.29	22.00
	46	81.56	73.09	79.62	14.32	21.95
	50	82.83	75.81	80.77	14.53	22.77
2	2	85.84	74.72	84.37	15.19	18.06
	31	82.68	70.95	80.69	14.53	17.15
	33	82.75	71.97	81.28	14.63	17.40
	36*	N.A.	N.A.	N.A.	N.A.	N.A.
	47	82.68	69.39	80.63	14.52	16.77
3	32	79.82	79.30	78.85	13.96	22.16
	38	78.35	80.58	77.09	13.65	22.52
	41	78.17	78.40	77.05	13.64	21.91
	43	76.09	77.92	74.44	13.18	21.78
	45	75.98	78.26	75.16	13.31	21.87
4	3*	N.A.	N.A.	N.A.	N.A.	N.A.
	4	75.32	71.85	73.43	12.98	15.82
	27	77.77	73.76	75.51	13.35	16.24
	37	79.72	76.72	77.83	13.76	16.89
	42	71.10	75.11	68.43	12.10	16.54
5	30	84.04	70.61	81.98	14.76	17.07
	34	85.24	74.44	83.82	15.09	17.99
	39*	N.A.	N.A.	N.A.	N.A.	N.A.
	48	85.83	75.23	84.50	15.21	18.19
	49	84.06	69.00	82.17	14.79	16.68
6	1	73.59	63.92	71.14	12.58	14.08
	5	71.61	68.05	69.19	12.23	14.98
	28	76.10	68.40	74.13	13.11	15.06
	29	73.56	72.55	71.74	12.68	15.96
	40	76.74	70.16	74.99	13.26	15.45

* Leg injuries; excluded from the experiment.

APPENDIX IX

Backfat depth (P2) measured by ultrasonic (Scanoprobe) and optical (Introscope) methods, Carcase Length (CL), Chest Depth (CD) and Girth of pigs which received different dietary and environmental temperature treatments in Laboratory Experiment 1.

Treatment	An.No.	Parameters			
		Backfat (P2)		Car.Length	Chest Depth
		Scanoprobe (mm)	Introscope (mm)	(cm)	(cm)
1	6	24	17	80.0	31.0
	26	28	19	80.8	29.0
	44	30	25	78.5	32.0
	46	16	21	82.0	32.0
	50	26	19	80.5	29.0
2	2	26	20	86.1	32.0
	31	30	26	83.5	33.5
	33	28	23	77.0	30.0
	36*	N.A.	N.A.	N.A.	N.A.
	47	24	18	78.6	31.0
3	32	24	19	82.0	31.0
	38	20	24	83.2	33.0
	41	26	22	79.2	29.0
	43	26	18	81.0	30.0
	45	24	18	83.5	34.0
4	3*	N.A.	N.A.	N.A.	N.A.
	4	26	20	75.5	31.0
	27	30	18	78.6	32.0
	37	24	14	88.5	30.0
	42	24	23	85.0	32.0
5	30	30	21	82.3	34.0
	34	34	24	80.4	33.0
	39*	N.A.	N.A.	N.A.	N.A.
	48	32	27	76.2	32.5
	49	32	22	78.0	33.0
6	1	28	21	78.4	32.5
	5	26	24	76.0	31.0
	28	28	22	84.6	36.5
	29	32	18	77.8	33.0
	40	28	25	78.0	32.0

* Leg injuries; excluded from experiment.

APPENDIX X

Respiration Rate (RR), Rectal (RT) and Skin (ST) Temperatures of pigs which received different dietary and environmental temperature treatments in Laboratory Experiment 1.

Treatment	An. No.	Parameters		
		RR (bre/min)	RT (° C)	ST (° C)
1	6	76	39.00	37.21
	29	117	38.72	37.32
	44	101	38.84	37.32
	46	96	38.56	36.76
	50	104	38.77	37.20
2	1	127	38.92	37.39
	31	101	38.94	37.14
	33	107	38.96	37.06
	34*	N.A.	N.A.	N.A.
	47	102	38.92	37.47
3	32	120	39.03	37.39
	39	134	39.18	37.65
	41	105	38.74	36.95
	43	127	39.18	37.36
	45	136	38.97	37.58
4	3*	N.A.	N.A.	N.A.
	4	146	39.19	37.41
	27	115	39.00	37.27
	37	106	38.80	37.20
	42	110	38.98	37.55
5	1	48	38.22	33.96
	5	48	38.59	34.98
	28	53	38.40	34.30
	29	56	38.41	33.60
	40	41	38.57	34.40
6	30	45	38.50	34.10
	34	37	38.46	33.57
	39*	N.A.	N.A.	N.A.
	48	26	38.37	34.09
	49	40	38.38	34.07

* Leg injuries; excluded from experiment.

APPENDIX XI

Daily Rate of Gain (DRG), Dressing Percentage (Dress%), Daily Dry Matter Intake (DMI), Feed Conversion Ratio (FCR), Daily Energy Intake (EI) and Energy Conversion Ratio (ECR) of pigs on different diets and environmental temperature treatments in Laboratory Experiment 2.

Treatment	An.Nr.	Parameters					
		DRG (g/d)	Dress% (%)	DMI (g/d)	FCR (kg/kg)	EI (MJ/d)	ECR (MJ/kg)
1	17	580	75.81	1626	2.79	23.78	41.90
	23	602	76.10	1692	2.81	25.87	42.89
	28	558	73.07	1600	2.87	22.93	41.11
	32	579	75.03	1623	2.80	24.07	41.57
	33	550	73.77	1539	2.78	23.24	42.27
2	24	485	75.51	1492	3.07	23.51	46.45
	25	426	74.43	1337	3.14	20.94	49.12
	26	433	76.22	1314	3.03	19.93	45.99
	37	542	81.46	1595	2.94	24.05	44.37
	45	505	78.16	1533	3.02	23.61	46.73
3	15	484	73.13	1433	2.96	19.82	46.94
	16	409	75.53	1350	3.30	19.09	46.64
	22	373	72.22	1302	3.49	17.03	45.71
	31	421	74.57	1304	3.10	18.62	44.23
	36	428	72.42	1583	3.70	22.00	51.41
4	19	389	69.18	1475	3.80	20.47	52.67
	20	440	73.63	1411	3.21	18.26	41.52
	21	422	68.69	1256	3.22	18.36	43.56
	26	390	72.21	1366	3.50	18.15	46.54
	35	588	76.35	1916	3.26	26.21	44.57
5	27	732	82.29	2231	3.05	34.40	47.00
	34	754	82.02	2081	2.76	32.07	42.54
	39	609	79.44	1800	2.96	27.76	45.61
	40	629	74.88	1557	2.47	24.63	39.13
	41	630	80.11	1649	2.93	26.42	45.06
6	16	520	74.39	1624	3.12	22.65	43.56
	38	628	73.91	1886	3.01	26.67	42.50
	42	510	75.66	2228	4.34	29.99	58.47
	43	596	73.26	1710	2.87	24.28	40.76
	44	556	75.86	1302	3.24	24.89	44.76

APPENDIX XII

Apparent Digestibility of Dry Matter (ADM), Protein (ADP) and Energy (ADE), Digestible Energy (DE) and Crude Protein (DCP) of diets given to pigs living in either hot or cold environments in Laboratory Experiment 2.

Treatment	Parameters				
	AN. No.	ADM (%)	ADP (%)	ADE (%)	DE (MJ/kg)
1	17	83.10	79.55	81.21	14.68
	20	85.41	80.60	84.59	15.29
	23	80.44	76.45	79.26	14.33
	27	82.90	77.93	82.00	14.83
	30	85.04	81.39	84.08	15.19
2	24	86.77	84.01	86.63	15.76
	25	86.40	82.50	85.05	15.60
	26	83.86	81.19	83.34	15.17
	27	82.89	76.80	82.85	15.08
	45	85.71	82.26	85.19	15.50
3	25	76.95	61.38	76.23	13.83
	26	78.23	61.61	77.94	14.14
	27	74.93	78.98	72.12	13.68
	28	79.46	65.17	78.70	14.29
	29	77.57	62.76	76.60	13.93
4	20	76.67	79.29	76.49	13.88
	21	71.89	74.99	71.30	12.94
	22	75.52	80.50	74.48	13.52
	23	74.85	79.93	73.24	13.29
	25	75.89	80.75	75.39	13.68
5	27	84.94	77.64	84.72	15.42
	34	84.99	77.91	84.70	15.41
	39	85.11	82.51	84.75	15.42
	41	87.03	84.58	86.93	15.82
	42	84.11	80.75	84.44	15.37
6	16	77.58	79.22	76.88	13.95
	25	78.44	82.18	77.92	14.14
	42	76.01	82.04	74.17	13.46
	43	78.92	82.57	78.23	14.20
	44	76.58	77.84	76.10	13.81

APPENDIX XIII

Backfat Depth (P2) measured by ultrasonic (Scanoprobe) and optical (Introscope) methods, Carcase Length (CL), Chest Depth (CD) and girth of pigs which received different dietary and environmental temperature treatments in Laboratory Experiment 2.

Treatment	An.No.	Parameters			
		Backfat (P2)		Char.Length	Chest Depth
		Scanoprobe (mm)	Introscope (mm)	(cm)	(cm)
1	17	20.80	18.80	82.3	28
	23	22.90	19.90	80.0	29
	29	23.25	24.25	79.2	31
	32	15.50	19.50	81.3	34
	33	28.85	16.85	79.2	29
2	24	16.65	17.65	80.5	30
	25	18.50	18.50	81.1	30
	26	14.00	17.00	80.0	31
	35	18.25	27.25	79.2	32
	45	18.75	21.75	81.2	29
3	15	12.45	17.45	81.4	28
	11	15.00	19.00	81.4	30
	22	20.25	19.25	80.5	28
	31	14.05	18.05	79.0	29
	36	20.65	18.65	80.0	30
4	19	20.25	20.25	74.2	29
	23	19.45	21.45	78.5	28
	21	18.30	16.30	79.2	30
	26	19.90	24.90	78.5	30
	35	18.25	22.25	82.3	32
5	27	16.50	24.50	83.0	32
	34	22.25	23.25	80.0	31
	39	18.00	24.00	80.7	31
	42	29.80	20.80	80.7	28
	41	24.50	19.50	83.2	31
6	16	24.00	20.00	79.8	32
	31	17.50	18.50	80.5	29
	43	21.00	25.00	76.2	29
	43	32.75	22.75	79.3	29
	44	18.75	17.75	81.2	29

APPENDIX XIV

Respiration Rate (RR), Rectal (RT) and Skin (ST) Temperatures of pigs which received different dietary and environmental temperature treatments in Laboratory Experiment 2.

Treatment	An. No.	Parameters		
		RR (b/min)	RT (°C)	ST (°C)
1	17	119	39.73	37.56
	23	121	39.73	37.60
	26	125	39.73	37.53
	32	133	39.68	37.60
	33	133	39.83	37.62
2	24	125	39.68	37.67
	25	126	39.85	37.64
	28	127	39.72	37.56
	37	125	39.70	37.59
	45	130	39.65	37.53
3	15	122	39.51	37.36
	16	115	39.46	37.22
	22	130	39.60	37.56
	31	132	39.62	37.60
	36	115	39.53	37.42
4	19	106	39.48	37.04
	20	117	39.60	37.20
	21	116	39.65	37.11
	26	111	39.63	37.17
	35	114	39.65	37.09
5	27	47	39.07	34.77
	34	46	39.03	34.91
	39	48	38.93	34.73
	40	39	39.03	34.85
	41	46	39.00	34.84
6	16	56	39.00	34.68
	38	51	39.02	34.73
	42	45	39.07	34.70
	43	46	39.02	34.60
	44	42	39.17	34.62

APPENDIX XV

Daily Rate of Gain (DRG), Dressing Percentage (Dress%), Daily Dry Matter Intake (DMI), Feed Conversion Ratio (FCR), Daily Energy Intake (EI) and Energy Conversion Ratio (ECR) of pigs on different dietary and environmental temperature treatments in Laboratory Experiment 3.

Treatment	An.No.	Parameters					
		DRG (g/d)	Dress% (%)	DMI (g/d)	FCR (kg/kg)	EI (MJ/d)	ECR (MJ/kg)
1	22	619	76.70	1600	2.59	23.73	38.32
	66	762	77.55	1980	2.60	29.59	38.82
	95	616	74.67	1570	2.54	21.60	35.07
	112	725	75.91	1920	2.65	25.52	35.20
	152	739	80.21	1710	2.32	25.51	34.52
2	34	632	77.32	1680	2.66	23.42	37.06
	70	386	71.72	1330	3.63	17.38	47.49
	93	508	73.53	1340	2.64	17.84	35.11
	97	639	77.94	1700	2.71	23.84	37.31
	99	621	76.97	1620	2.61	23.47	37.80
3	73	751	76.29	1890	2.65	26.44	37.87
	93	735	76.66	2140	2.91	30.97	42.12
	97	692	80.90	1700	2.49	24.97	36.62
	94	645	74.53	1380	2.15	19.79	39.69
	93	591	73.26	1870	3.51	26.37	48.56
4	9	454	73.93	1190	2.63	16.34	35.99
	33	663	72.96	2120	3.10	28.41	41.59
	59	567	75.23	1640	2.71	21.82	38.49
	93	661	76.09	1670	2.52	21.56	32.62
	101	476	73.13	1310	2.75	17.55	36.86
5	53	826	76.67	2270	2.74	31.42	38.00
	66	821	76.63	2240	2.72	32.66	39.76
	83	849	73.09	2210	2.63	32.22	38.36
	92	867	77.09	2250	2.60	30.29	34.93
	125	669	77.84	1980	2.96	28.31	42.37
6	27	664	77.06	1990	2.99	27.78	41.84
	62	682	76.57	1790	2.62	25.13	36.85
	71	717	76.44	2240	3.12	30.04	41.89
	85	748	72.99	1910	2.55	25.98	34.73
	100	722	73.45	2140	2.97	27.50	38.09

APPENDIX XVI

Apparent Digestibility of Dry Matter (ADM), Protein (ADP) and Energy (ADE), Digestibles Energy (DE) and Crude Protein (DCP) of dietary given to pigs living in either hot or cold environments in Laboratory Experiment 3.

Treatment	An. No.	Parameters				
		ADM (%)	ADP (%)	ADE (%)	DE (MJ/Lkg)	DCP (%)
1	22	79.18	82.93	81.11	14.73	14.74
	66	80.26	80.93	81.71	14.94	13.97
	95	75.25	83.60	75.15	15.71	14.47
	112	75.44	79.36	72.68	13.29	13.72
	150	77.96	79.81	81.60	14.92	13.80
2	34	79.15	79.97	78.00	13.94	13.74
	72	75.69	77.22	73.41	13.07	13.17
	93	71.86	81.90	74.76	13.31	14.07
	97	79.70	82.46	77.40	13.73	14.17
	98	77.52	82.29	81.39	14.49	14.14
	73	80.71	83.56	77.57	14.29	14.74
3	67	77.59	80.39	78.54	14.47	14.18
	90	82.25	85.41	79.74	14.69	15.07
	94	83.63	85.33	77.84	14.34	15.05
	96	79.80	82.99	76.54	14.10	14.64
	9	76.43	78.67	72.87	13.73	13.70
4	23	76.29	80.35	71.12	13.40	13.99
	69	78.36	82.47	75.21	14.17	14.36
	96	71.15	79.86	68.52	12.91	13.91
	151	73.36	78.99	71.12	13.40	13.74
	59	77.89	82.46	77.74	13.84	14.16
5	68	79.69	82.46	81.89	14.56	14.17
	89	81.14	81.81	81.89	14.58	14.05
	91	78.65	81.71	75.68	13.46	14.04
	125	78.68	82.69	80.32	14.30	14.19
	27	77.42	79.66	74.09	13.86	13.87
6	63	76.20	81.62	74.52	14.04	14.21
	71	75.31	76.39	71.17	13.41	13.30
	85	76.67	81.33	72.18	13.60	14.16
	100	72.19	69.20	68.20	12.85	12.05

APPENDIX XVII

Backfat Depth (P2) measured by ultrasonic (Scansprobe) and optical (Introscope) methods, Carcase Length (CL), Chest Depth (CD) and Girth of pigs which received different dietary and environmental temperature treatments in Laboratory Experiment 3.

Treatment	An.No.	Parameters				
		Backfat (P2)		Car.Length	Chest Depth	
		Scansprobe (mm)	Introscope (mm)	(cm)	(cm)	
1	82	15	19	79.5	31	100
	66	17	20	78.0	30	98
	95	13	16	75.5	31	99
	112	19	21	76.0	31	99
	152	15	19	78.5	30	99
2	34	13	17	78.5	29	99
	70	20	17	76.0	30	98
	92	21	20	81.0	31	101
	97	15	19	76.5	30	100
	99	14	20	77.0	31	99
3	76	15	18	76.0	31	100
	93	15	21	75.2	29	98
	99	12	17	77.0	30	101
	94	15	22	80.5	31	100
	98	19	18	80.5	30	100
4	8	19	27	74.0	29	100
	21	12	18	77.5	30	99
	69	16	21	76.5	28	98
	98	13	17	76.0	30	100
	151	21	20	77.0	31	97
5	59	14	20	79.5	32	102
	69	14	19	77.5	32	100
	89	16	22	81.0	30	102
	92	14	15	75.0	31	103
	125	17	23	80.0	32	99
6	27	19	23	78.0	30	100
	63	19	17	80.0	31	98
	71	15	21	77.5	29	102
	65	17	21	74.0	32	101
	100	17	24	76.5	30	101

APPENDIX XVIII

Respiration Rate (RR), Rectal (RT) and Skin (ST) Temperatures of pigs which received different dietary and environmental temperature treatments in Laboratory Experiment 3.

Treatment	Parameters			
	AN. No.	RR (b/min) ^a	RT (°C)	ST (°C)
1	22	137	39.43	37.69
	66	107	39.31	37.74
	85	140	39.18	37.69
	112	138	39.49	37.71
	152	149	39.37	37.80
2	34	120	39.20	37.49
	70	112	39.17	36.98
	92	117	39.13	37.24
	97	111	39.20	37.26
	99	124	39.16	37.49
	73	116	39.31	36.89
3	67	117	39.19	36.46
	89	117	39.28	36.94
	95	111	39.16	37.07
	98	119	39.22	36.82
	6	101	39.27	37.16
4	31	107	39.23	37.10
	69	101	39.25	37.57
	88	107	39.20	37.45
	151	107	39.22	37.15
	58	95	39.93	33.76
5	69	93	39.93	33.49
	89	109	38.88	33.57
	92	101	39.97	33.47
	125	107	39.00	33.39
	27	95	38.93	33.39
6	63	93	38.90	33.63
	71	47	38.93	33.71
	85	47	38.93	33.67
	130	47	38.93	33.33

APPENDIX XIX

Daily Rate of Gain (DRG), Dressing Percentage (Dress%), Daily Dry Matter Intake (DMI), Feed Conversion Ratio (FCR), Daily Energy Intake (EI) and Energy Conversion Ratio (ECR) of pigs on different dietary and environmental temperature treatments in Laboratory Experiment 4.

Treatment	An. No.	Parameters				
		DRG (g/d)	Dress% (%)	DMI (g/d)	FCR (kg/kg)	EI (MJ/d)
1	306	549	76.3	1836	3.64	27.47
	311	420	76.2	1390	3.61	20.49
	318	606	76.0	1675	3.76	24.94
	319	486	74.9	1755	3.61	26.40
	326	526	78.6	1612	3.44	26.98
2	304	575	76.1	1729	3.01	26.61
	307	453	75.2	1546	3.41	23.59
	312	647	83.0	2016	3.19	20.91
	317	344	70.0	1210	3.53	19.86
	321	551	74.6	1661	3.62	26.97
3	308	660	76.8	1953	2.96	30.72
	310	415	74.1	1246	3.03	19.64
	313	442	75.5	1411	3.21	22.01
	314	502	75.2	1663	3.31	25.01
	323	467	72.9	1460	3.17	22.53
4	302	534	78.5	1672	3.13	26.48
	324	572	76.1	1458	2.55	22.99
	327	537	76.2	1642	3.27	25.99
	328	490	78.6	1929	3.94	26.53
	331	536	75.1	1610	3.00	24.15
5	301	616	76.9	2265	3.71	33.37
	306	587	78.0	1916	3.18	28.18
	315	729	75.4	2254	3.10	30.27
	316	390	75.3	1370	3.51	26.18
	329	516	76.9	1789	3.47	26.98
6	309	871	81.5	2422	2.76	36.29
	320	526	76.2	1523	2.91	23.67
	322	656	76.5	1934	2.97	26.66
	325	630	76.1	1971	2.97	26.59
	329	671	78.0	1924	2.70	26.60

APPENDIX XX

Apparent Digestibility of Dry Matter (ADM), Protein (ADP) and Energy (ADE), Digestibles Energy (DE) and Crude Protein (DCP) of dietary given to pigs living in either hot or cold environments in Laboratory Experiment 4.

Treatment	An.No.	Parameters				
		ADM (%)	ADP (%)	ADP (%)	DE (MJ/kg)	DCP (%)
1	308	83.16	77.01	82.59	14.96	12.62
	311	82.28	74.27	81.49	14.74	11.47
	318	82.49	74.68	82.20	14.89	12.24
	319	83.44	77.10	83.06	15.04	12.64
	326	82.99	74.58	82.22	14.89	12.22
2	304	82.84	75.25	82.41	15.40	12.54
	307	82.48	73.59	81.69	15.26	12.27
	312	82.65	74.13	82.02	15.33	12.38
	317	83.80	77.08	83.44	15.59	12.85
	321	87.46	81.77	86.86	16.22	13.63
3	303	82.60	72.26	82.25	15.68	11.69
	310	83.13	76.68	82.68	15.76	12.71
	313	82.34	75.57	81.87	15.63	12.22
	314	79.56	70.81	78.99	15.04	11.45
	323	80.38	72.09	79.87	15.22	11.66
4	302	83.93	74.71	83.24	15.83	12.13
	324	82.42	74.59	81.85	15.56	12.11
	327	83.38	74.84	82.88	15.76	12.15
	328	79.81	67.47	77.77	14.79	10.96
	331	80.03	68.53	76.92	15.00	11.13
5	301	81.71	72.27	81.09	14.69	11.65
	309	82.47	72.22	81.51	14.76	11.84
	315	82.08	73.17	81.98	14.85	11.99
	316	82.22	77.24	82.16	14.88	12.66
	330	83.70	75.20	83.24	15.07	12.33
6	309	83.69	74.62	83.16	15.81	12.11
	320	82.02	71.50	81.41	15.46	11.61
	322	78.79	68.28	78.01	14.82	11.09
	325	81.10	70.47	80.39	15.28	11.44
	329	83.55	74.33	83.03	15.79	12.97

APPENDIX XXI

Backfat Depth (F2) measured by ultrasonic (Scopropulse) and optical (Intrascope) methods, Carcass Length (CL), Chest Depth (CD) and Girth of pigs which received different dietary and environmental temperature treatments in Laboratory Experiment 4.

Treatment	An. No.	Parameters				
		Backfat (F2) mm	Carc. Length (cm)	Chest Depth (cm)		
				Scopropulse	Intra scope	Girth (cm)
1	306	16	10	86.0	81	104
	311	16	10	83.0	81	91
	318	18	10	81.0	83	104
	346	24	12	77.0	74	107
	326	22	10	81.0	83	100
2	304	24	10	80.0	83	107
	307	24	10	81.0	81	101
	312	24	10	87.0	82	107
	317	26	10	79.0	77	94
	323	26	10	85.0	81	101
	325	26	10	82.0	80	105
3	310	22	10	79.0	74	101
	312	22	10	81.0	81	105
	323	22	10	82.0	82	101
	325	22	10	77.0	79	100
4	302	26	10	81.0	83	100
	324	24	10	87.0	82	101
	325	26	10	82.0	85	107
	329	26	10	79.0	81	100
	331	24	10	85.0	86	101
5	301	20	10	83.0	82	101
	302	20	10	80.0	81	104
	315	24	10	84.0	83	106
	316	20	10	77.0	78	93
	320	22	10	79.5	81	104
6	309	28	14	84.4	82	102
	310	26	10	76.0	81	101
	322	28	10	77.2	81	102
	325	24	10	79.0	79	105
	326	24	10	80.2	84	105

APPENDIX XXII

Respiration Rate (RR), Rectal (RT) and Skin (ST) Temperatures of pigs which received different dietary and environmental temperature treatments in Laboratory Experiment 4.

Treatment	An.No.	Parameters		
		RR (b/min)	RT (° C)	ST (° C)
1	308	125	39.44	37.12
	311	126	39.49	37.48
	318	127	39.68	37.26
	319	133	39.52	37.26
	326	138	39.68	37.56
2	304	129	39.60	37.28
	307	129	39.52	37.16
	312	129	39.44	37.16
	317	128	39.68	37.18
	321	114	39.44	37.24
3	303	115	39.48	37.04
	310	116	39.40	36.96
	313	118	39.48	37.14
	314	114	39.44	37.24
	323	121	39.48	37.08
4	303	124	39.56	37.20
	324	117	39.52	37.23
	327	121	39.46	37.36
	329	134	39.64	37.40
	331	126	39.52	37.40
5	301	34	39.00	34.85
	306	32	39.03	34.90
	315	30	39.00	34.85
	316	30	38.95	34.65
	330	42	39.05	34.45
6	309	38	39.10	34.70
	320	32	38.90	34.82
	322	28	39.10	34.43
	325	30	39.05	34.93
	329	35	39.05	34.30

APPENDIX XXIII

Total Dry Matter Intake (TDMI) over a 5 day period and Apparent Digestibilities of Dry Matter (ADM), Energy, (ADE) and Protein (ADP) of diets HH, HL, LH and LL given to pigs in Laboratory Experiment 5.

Cycle	Code*	DM Intake		Apparent Digestibility (%)		
		Animal No.	Diet	(g)	ADM	ADE
1	1	4	3917	64.74	64.64	75.33
1	2	2	3567	74.72	74.12	75.59
1	3	3	4612	78.74	77.92	80.99
1	4	3	4651	69.17	69.67	75.95
1	11	4	3710	69.35	69.76	75.18
1	22	2	3586	77.00	77.52	79.99
1	33	3	4620	75.99	76.39	80.51
1	44	3	4655	68.16	68.59	75.89
1	1	1	4289	69.47	69.11	82.85
1	2	2	3757	69.88	70.00	83.12
1	3	3	4168	76.49	77.79	79.92
1	4	4	4504	70.47	70.76	76.54
1	11	2	4240	78.05	77.62	81.73
1	22	3	3767	67.94	69.01	77.84
1	33	3	4280	73.89	73.46	77.21
1	44	4	4539	68.08	68.50	75.95
1	1	2	4444	67.27	67.22	77.49
1	2	3	4146	80.00	79.61	83.24
1	3	3	4536	72.69	72.76	82.24
1	4	4	4686	80.30	79.68	78.90
1	11	3	4447	69.84	70.61	80.05
1	22	3	4174	79.52	79.64	81.55
1	33	4	4537	70.51	71.08	80.22
1	44	2	4714	79.09	78.53	79.37
2	1	4	4655	77.15	76.05	77.33
2	2	4	3986	72.21	72.37	81.34
2	3	3	5131	71.20	70.91	83.31
2	4	1	5227	79.76	79.29	81.56
2	11	4	4355	78.30	77.54	80.57
2	22	4	3986	68.68	68.08	73.75
2	33	3	5130	68.52	69.93	82.13
2	44	1	5317	77.44	76.73	81.22

* Animal number 1, 2, 3 and 4 were in the hotroom and, 11, 22, 33 and 44 were in the control-room.

Diets 1, 2, 3, and 4 were HH, HL, LH and LL, respectively.

APPENDIX XXIV

Total Nitrogen Retention (TNR) and Nitrogen Retained as a Percentage of Total Nitrogen ingested (TNR%) by pigs in Laboratory Experiment 5.

Cycle (g)	Code*	An. No.	Diet (%)	Nitrogen Retained	
				TNR	TNR%
1	1	1	4	42.36	46.06
1	1	2	2	42.64	44.67
1	1	3	1	55.92	36.63
1	1	4	3	59.89	45.89
1	1	4	4	35.31	40.54
1	1	11	4	37.01	38.56
1	1	12	4	54.76	35.83
1	1	33	4	55.31	42.34
1	1	34	4	65.73	46.30
1	1	35	4	47.93	45.47
1	1	36	4	22.19	20.31
1	1	37	4	47.69	45.29
1	1	38	4	54.00	38.23
1	1	39	4	42.95	40.64
1	1	40	4	51.77	33.12
1	1	41	4	40.52	40.84
1	1	42	4	57.81	46.36
1	1	43	4	47.36	34.51
1	1	44	4	45.29	42.46
1	1	45	4	60.67	49.30
1	1	46	4	66.77	55.11
1	1	47	4	52.63	38.10
1	1	48	4	29.80	37.36
1	1	49	4	47.51	37.66
1	1	50	4	45.97	35.37
1	1	51	4	42.38	45.21
1	1	52	4	54.19	37.64
1	1	53	4	71.26	40.43
1	1	54	4	48.07	36.99
1	1	55	4	36.11	38.59
1	1	56	4	63.10	43.63
1	1	57	4	64.08	36.35

* Animal number 1, 2, 3 and 4 were in the hotroom and, 11, 22, 33 and 44 were in the control-room.

Diets 1, 2, 3, and 4 were HH, HL, LH and LL, respectively.

APPENDIX XXV

Evaporation rates as affected by duration of sprinkling.

Sprinkling duration (sec)	Equation	n	R ²
0	Average evaporation rate = 2.30 g/min		
30	$\text{Y} = 4.0536 - 0.02162\text{X}$	23	0.351
60	$\text{Y} = 5.0228 - 0.03291\text{X}$	35	0.763
90	$\text{Y} = 5.7065 - 0.07157\text{X} + 0.00042\text{X}^2$	35	0.699
120	$\text{Y} = 5.2404 - 0.02769\text{X}$	40	0.412

APPENDIX XXVI

Average Daily Dry Matter Intake (DMI), Daily Rate of Gain (DRG), Feed Conversion Ratio (PCR) and Dressing Percentage (Dress%) in pigs which received different water and environmental temperature treatments in Laboratory Experiment 7.

Treatment	Parameters				
	An. No.	DMI (g/d)	DRG (g/d)	PCR (kg/kg)	Dress% (%)
1	63	1537	462	3.33	72.06
	395	1934	624	3.10	73.63
	372	1851	599	3.09	73.33
	391	1699	507	3.35	73.29
	398	1598	411	3.89	74.23
2	373	2296	784	2.93	76.63
	375	2361	806	2.93	74.44
	376	1771	599	2.96	72.54
	379	2291	720	3.06	73.33
	386	1973	623	3.17	74.73
3	377	1840	581	3.17	74.64
	391	1956	576	3.22	75.29
	367	1946	583	3.34	76.32
	394	1320	586	3.06	74.43
	400	1716	637	2.89	73.60
4	371	1817	556	3.27	71.76
	378	1857	614	3.02	75.22
	384	1774	669	2.65	73.45
	392	1724	563	3.06	75.23
	396	1564	537	2.91	72.41
5	388	1507	574	2.63	74.17
	390	1866	602	3.10	73.91
	374	1812	612	2.96	72.34
	395	1645	605	2.72	77.52
	370	1574	572	2.75	75.36
6	382	2274	734	3.10	74.44
	363	2474	686	3.61	79.35
	389	2261	760	2.98	76.67
	395	2042	619	3.30	75.06
	399	1909	627	3.04	73.03

APPENDIX XXVII

Backfat Depth (P2) measured by "Scanoprobe" and "Introscope", Carcase Length (CL), Chest Depth (CD) and Girth of pigs which received different water and environmental temperature treatments in Laboratory Experiment 7.

Treatment	Parameters				
	An.No.	Backfat (P2)		Car.Length (cm)	Chest Depth (cm)
		Scanoprobe (mm)	Introscope (mm)		
1	63	16	17	81.5	32
	385	16	18	80.0	30
	372	16	17	82.0	31
	381	18	17	76.5	29
	396	22	19	72.0	27
2	373	16	22	78.0	31
	375	20	26	77.5	32
	378	14	18	79.0	32
	379	20	21	77.7	31
	380	20	23	84.5	37
3	377	18	17	76.0	30
	381	16	18	81.5	30
	387	16	22	82.5	32
	384	18	19	82.5	30
	400	16	23	81.2	31
4	371	16	21	78.5	30
	373	20	17	84.0	35
	384	16	16	80.5	34
	392	16	20	80.0	31
	396	16	17	82.0	31
5	388	18	17	81.5	31
	380	18	17	80.0	31
	374	20	23	81.0	29
	393	18	20	79.0	32
	370	16	22	79.0	29
6	382	16	23	78.5	30
	383	18	19	84.0	33
	389	14	17	80.0	31
	395	20	23	76.5	31
	399	20	23	75.5	29

APPENDIX XXVIII

Respiration Rate (RR), Rectal (RT) and Skin (ST) Temperatures in pigs which received different water and environmental temperature treatments in Laboratory Experiment 7.

Treatment	An.No.	Parameters		
		RR (b/min)	RT (° C)	ST (° C)
1	66	157	39.49	37.56
	385	149	39.42	37.62
	372	147	39.42	37.62
	391	137	39.31	37.59
	398	164	39.51	37.58
2	373	74	38.78	36.20
	375	92	38.82	35.84
	376	48	38.69	36.16
	379	81	38.90	36.00
	386	66	38.73	36.44
3	377	109	38.91	36.34
	381	76	38.76	36.30
	387	81	38.88	36.52
	394	73	38.76	36.39
	400	116	38.75	36.20
4	371	132	39.44	37.74
	378	125	39.36	37.74
	384	151	39.25	37.80
	392	134	39.44	37.74
	396	132	39.44	37.54
5	388	52	38.58	34.08
	380	47	38.58	32.84
	374	46	38.53	33.88
	393	45	38.40	35.88
	370	39	38.64	34.18
6	382	50	38.40	34.02
	383	50	38.60	34.24
	389	47	38.50	34.24
	395	38	38.51	34.16
	399	42	38.67	34.26

APPENDIX XXIX

Average Daily Energy Intake (EI), Energy Conversion Ratio (ECR), Apparent Digestibilities of Dry Matter (ADM), Protein (ADP), Energy (ADE) and in the Digestibles Energy (DE) and Crude Protein (DCP) contents of diet given to pigs in treatments 1 and 6 in Laboratory Experiment 7.

Treatment	Animal No.	EI (MJ/d)	ECR (MJ/kg)	ADM (%)	ADP (%)	ADE (%)	DE (%)	DCP (%)
1	6.3	22.29	48.47	81.78	87.84	81.42	14.54	15.51
	372	26.29	43.89	79.83	85.32	79.56	14.21	15.15
	385	27.15	43.52	78.89	85.55	78.78	14.07	15.00
	391	24.56	48.55	81.17	86.46	80.93	14.45	15.41
6	389	23.47	57.25	81.27	86.66	81.14	14.67	15.45
	382	31.10	42.37	78.91	81.88	76.72	13.70	14.61
	383	35.02	51.06	80.34	84.10	79.40	14.18	15.12
	389	32.48	42.79	80.25	83.86	80.16	14.37	15.27
395	29.21	47.19	80.34	85.18	80.19	14.32	15.27	
	399	25.88	41.28	76.27	83.44	75.86	13.55	14.45

APPENDIX XXX

Average Daily Dry Matter Intake overall experimental period , two weeks prior to calorimeter measurement of periods I and II of pigs in Laboratory Experiment 9.

Group	Anim.No.	Average Daily Dry Matter Intake (g/d)		
		Overall	Period I	Period II
1	25	1377	1280	1796
	26	1369	1260	1611
	33	1192	1184	1317
	39	1898	2324	2613
	42	1391	1253	1633
	43	1366	1186	1500
2	29	1296	1261	1549
	30	1468	1363	1845
	36	1634	1383	1575
	38	1820	1781	2221
	40	1872	1372	1807
	73	1529	1424	1566
3	41	1705	1372	1734
	45	1944	2165	2580
	71	1753	1798	1996
	92	1729	2097	2496
	100	1605	1647	2067
	118	1457	1613	1846

APPENDIX XXXI

Feed Conversion Ratio (FCR) for overall experimental period and two weeks prior to calorimeter measurement of periods I and II of pigs in Laboratory Experiment 9.

Group	Anim.No.	Feed Conversion Ratio (kg/kg)		
		Overall	Period I	Period II
1	25	2.77	2.21	3.08
	26	2.48	2.08	2.85
	33	2.97	2.00	3.00
	39	2.66	2.05	2.51
	42	2.70	2.80	3.99
	43	2.59	2.47	2.34
2	29	2.80	2.31	2.78
	30	2.59	2.82	2.37
	36	2.60	2.19	3.22
	38	2.60	2.34	3.18
	49	2.72	1.61	2.48
	73	2.66	2.15	2.41
3	41	2.56	1.87	2.42
	45	2.63	2.55	2.47
	71	2.94	2.23	3.54
	92	2.59	2.55	2.77
	100	2.50	1.68	2.45
	108	2.79	2.68	2.99

APPENDIX XXXII

Overall Respiration Rates and Respiration Rates over two weeks prior to calorimeter measurements of pigs in Laboratory Experiment 8.

Group	Anim.Nr.	Respiration Rate (b/min)		
		Overall	Period I	Period II
1	25	106	118	99
	26	87	74	67
	33	85	85	88
	39	111	112	122
	42	91	84	87
	43	104	111	111
2	29	100	91	92
	30	98	96	97
	36	99	93	99
	38	122	116	118
	40	115	120	112
	73	116	124	121
3	41	29	24	26
	45	29	25	26
	71	26	26	13
	92	30	35	29
	100	27	26	24
	118	29	29	27

APPENDIX XXXIII

Overall Rectal Temperature and Rectal Temperature over two weeks prior to calorimeter measurement of pigs in Laboratory Experiment 8.

Group	Anim.No.	Rectal Temperature (°C)		
		Overall	Period I	Period II
1	25	39.31	39.39	39.35
	26	39.67	39.74	39.55
	33	39.39	39.20	39.47
	39	39.60	39.55	39.63
	42	39.21	39.11	39.23
	43	39.24	39.33	39.24
2	29	39.50	39.44	39.36
	30	39.43	39.38	39.45
	36	39.51	39.33	39.53
	38	39.78	39.69	39.76
	47	39.63	39.53	39.63
	73	39.46	39.47	39.54
3	40	39.99	39.94	39.91
	45	39.95	39.89	39.91
	71	39.98	39.90	39.97
	92	39.11	39.09	39.19
	100	39.12	39.05	39.19
	116	39.19	39.09	39.20

APPENDIX XXXIV

Overall Daily Rate of Gain and Daily Rate of Gain during two weeks prior to calorimeter measurements in periods I and II of pigs in Laboratory Experiment 8.

Group	Anim.No.	DRG(Overall) (g/d)	DRG two weeks prior calorimeter	
			Period I (g/d)	Period II (g/d)
1	25	498	306	583
	26	553	417	569
	33	402*	591	(sick)
	39	708	763	745
	42	515	447	439
	43	503	481	641
2	23	463	546	557
	30	566	467	779
	36	629	631	819
	38	651	762	696
	40	636	271	716
	73	574	661	659
3	41	665	734	716
	45	742	846	744
	71	596	805	443
	92	754	822	901
	100	643	692	643
	118	523	600	619

APPENDIX XXXV

Average liveweight, Respiratory Quotient (R.Q.), total heat production heat production per kg liveweight and per $\text{kg}\text{gw}^{-1.5}$ liveweight in two different periods of pigs living in two environmental temperatures in Laboratory Experiment 8.

Group	Anim.No.	Ave.Wt. (kg)	R.Q.	Metabolic Heat Production		
				MJ/pig ♂	kJ/kg	kJ/kgw ^{-1.5}
Period I						
1	25	55.90	0.70	7.58	135.50	370.00
	26	58.60	0.74	10.20	174.50	481.00
	32	52.10	0.67	9.14	175.30	471.00
	39	67.70	0.71	10.30	152.10	436.40
	42	53.70	0.70	9.66	180.00	487.00
	43	51.30	0.73	6.85	135.50	357.30
2	29	59.00	0.68	9.80	166.00	460.20
	30	57.90	0.68	8.82	152.30	420.10
	36	62.60	0.73	8.92	142.40	400.50
	39	58.90	0.75	8.59	145.90	404.20
	40	57.50	0.71	8.55	149.90	410.00
	73	58.00	0.65	9.30	160.80	443.60
3	41	58.80	0.69	9.52	161.80	448.20
	45	67.80	0.73	8.37	123.40	354.10
	71	56.60	0.75	9.75	172.50	472.50
	91	66.40	0.76	8.22	123.30	353.50
	100	58.50	0.65	9.00	153.80	425.50
	108	63.80	0.73	8.19	128.50	363.00
Period II						
1	25	71.30	0.68	11.26	157.90	458.90
	26	75.90	0.75	10.49	136.20	407.80
	33	61.20	0.69	10.83	176.90	484.90
	39	87.90	0.82	15.53	176.80	541.20
	42	69.10	0.71	14.08	203.90	587.80
	43	65.80	0.81	8.95	136.10	387.70
2	29	72.80	0.73	10.14	139.40	407.20
	30	75.20	0.73	15.08	200.60	580.60
	36	80.60	0.76	11.37	140.90	432.40
	39	77.40	0.73	8.39	108.50	321.70
	40	75.20	0.79	8.38	111.50	328.30
	72	74.40	0.79	11.24	151.10	443.70

APPENDIX XXXV (Cont.)

Group	Anim. No.	Ave. wt. (kg)	R.Q.	Metabolic Heat Production		
				MJ/pig/d	KJ/kg	KJ/kgW ^{.75}
♂	41	74.60	0.77	15.15	203.10	596.90
	45	86.30	0.79	10.50	118.90	304.80
	71	72.20	0.72	12.48	173.00	504.70
	92	89.60	0.73	12.54	142.10	392.90
	100	74.80	0.70	15.06	201.40	592.30
	118	77.90	0.75	11.45	147.00	406.60