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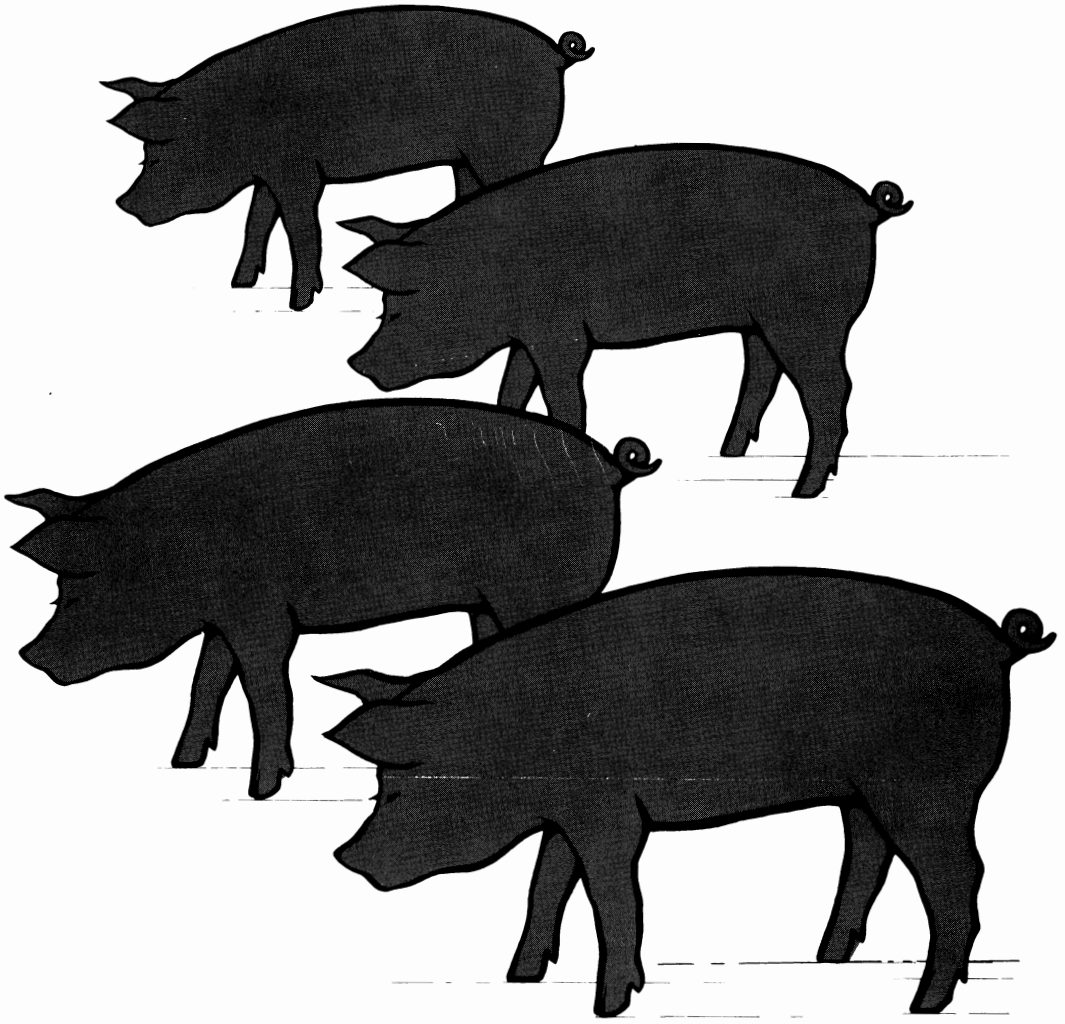

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A SUMMARY OF GENETIC AND PHENOTYPIC STATISTICS FOR PUBERTAL AND GROWTH CHARACTERISTICS IN SWINE

L.K. Hutchens and R.L. Hintz

Genetic improvement of traits in swine can be accomplished through selection. The effectiveness of selection depends largely on the magnitude of heritabilities of the traits. In addition, knowledge of genetic and phenotypic relationships among traits are needed to develop programs for improving net merit which require simultaneous improvement of several traits.

The objective of this report is to summarize the reported genetic and phenotypic estimates for individual growth and pubertal characteristics in swine. It should be useful to both researchers and teachers in animal science.

Estimates involving different populations under different environments might be expected to be different. Thus for within herd selection by individual seed stock producers, estimates determined within a herd would be best. However, since obtaining within herd estimates is not always possible or practical, we often rely upon average estimates taken from many sources. Although the estimates taken from the literature are from a wide diversity of populations and under different environmental conditions, an average of reported estimates may be one of the best values available for general breeding programs; since individual estimates are often based upon too few animals and are subject to large sampling errors.

Traits

The traits included in this summary were the birth weight, weaning weight, postweaning daily gain, adjusted age to reach a constant weight, live backfat, age at puberty and weight at puberty. Weights of pigs weaned between 21 and 72 days of age were included as weaning weights. Postweaning daily gain was defined as average daily gain measured from a weight near weaning to a final age or constant weight. Adjusted age to reach a constant weight includes ages to reach 88 to 100 kg. Live backfat measurements were adjusted to either a constant age or constant weight. Age and weight at puberty were age and weight at the first detectable estrus exhibited by a gilt.

Weighted averages

Weighted averages were obtained by weighting individual estimates by the number of offspring involved. Thus, estimates without a number of offspring reported were not included in the weighted average. An individual estimate was defined as one obtained from an unique group of animals.

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Only one estimate was utilized for each unique group of animals. For those studies which obtained estimates utilizing several methods from the same group of animals, an average estimate was obtained by either taking a weighted average of the estimates if the number of animals utilized for each method was available; or a simple average if the number of animals was not available. Whenever estimates were reported on a group of animals, which also were included in later reports, a weighted average of the estimates was obtained by weighting the estimates by the number of offspring. Thus, only one estimate per unique group of animals was included in the weighted averages presented in this report.

Simple averages

Only one estimate for each unique group of animals was included in the simple average.

Statistical abbreviations and symbols

h^2 - Heritability ± the standard error of the estimate.

N_l - Number of litters

N_o - Number of offspring

N_s - Number of sires

r_g - Genetic correlation

r_p - Phenotypic correlation

σ^2 - Phenotypic variance

Abbreviations of methods used to obtain heritability, genetic correlation, variance and covariance estimates

AMP - Average of maternal and paternal half-sib correlations
COP - Correlation between progeny test of the parents and the progeny test of their offspring, each based on a group of full sibs
FS - Full-sib correlation
IC1 - Modified paternal half-sib correlation (corrected for inbreeding)
IC2 - Modified paternal half-sib correlation (corrected for the average relationship between mates of a sire)
IC3 - Modified paternal half-sib correlation (corrected for increased genetic likeness of sows within a herd)
ISR - Intra-sire regression of offspring on dam
MID - Modified intra-sire regression of offspring on dam (corrected for inbreeding)
MOP - Modified regression of offspring on midparent (corrected for inbreeding)
MHS - Maternal half-sib correlation
PHS - Paternal half-sib correlation
REL - Realized estimates from selection
ROD - Regression of offspring on dam
ROS - Regression of offspring on sire
ROP - Regression of offspring on midparent average

Abbreviations for sex of animal

B - Barrow (male castrate)
BO - Boar
G - Gilt
M - Mixed sexes (more than one sex classification)

Abbreviations used to describe the breeds or lines

B - Berkshire
BL - British Landrace
BT - Beltsville
COP - Central population composed of several breeds
CW - Chester White
D - Duroc
DJ - Duroc Jersey
DL - Danish Landrace
FX - Animals involved were inbred e.g. FX (D) = a population of Durocs with some degree of inbreeding
FS - Animals involved were selected for backfat thickness e.g. FS (Y) = Yorkshires selected for backfat
GIL - German Improved Landrace
GL - German Landrace
GS - Animals involved were selected for growth rate e.g. GS (H) = Hampshires selected for growth rate
H - Hampshire
ILW - Irish Large White
L - Landrace
LB - Large Black
LC - Lacombe
LW - Large White
LX - Animals involved were produced from line crosses
MG - Managara
MIX - Three or more breeds involved
MN - Minnesota synthetics
NGP - Nebraska Gene Pool (a synthetic developed from 14 breeds)
PB - Animals involved were purebreds e.g. PB (D+Y) = purebred Durocs & Yorkshires
PC - Poland China
SL - Swedish Landrace
XB - Animals involved were crossbreds e.g. XB (D,Y+H) refers to a population of Duroc, Yorkshire and Hampshire crossbreds
Y - Yorkshire

LIST OF TABLES

Table 1. Summary of heritability and phenotypic variance estimates for birth weight

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Lush et al., 1934	3,639	506	--	M	Mix	PHS	.0586	.02
Baker et al., 1943	994	259	62	M	FX (D)	IC1	.0607	.00
Nordskog et al., 1944	2,396	340	110	M	FX	MID	--	.14
Krider et al., 1946	749	98	41	M	GS (H)	PHS	.0555	.05
Dickerson & Grimes, 1947	567	87	--	M	D	ROS	--	-.38
						ROD	--	.12
						ROP	--	-.23±.13
Craig et al., 1956[a]	2,036	288	124	M	GS (H)	IC1	.0574	.28
Noland et al., 1966	3,360	411	106	-	PC	ROS	--	.24±.10
Louca & Robison, 1967	674	--	--	BO	PB (D+Y)	PHS	.0755	.09±.29
	735	--	--	G	PB (D+Y)	PHS	.0669	.05±.20
	3,275	--	--	B	XB (D+Y)	PHS	.1032	.01±.05
	3,357	--	--	G	XB (D+Y)	PHS	.1079	.03±.05
Roy et al., 1968	1,246	--	--	M	MG	PHS	--	.10±.15
Vangelov, 1969	10,309	--	--	-	LW	--	--	.46
Berruecos et al., 1970	483	--	55	M	FS (XB)	--	--	.21±.15[b]
Fahmy & Bernard, 1970	6,846	--	161	M	Y	IC1	--	.07±.35
		--				MOP	--	.27±.06
Edwards & Omtvedt, 1971	3,760	--	353	M	COP	ROS	--	.04±.04
						ROD	--	-.04±.04
						ROP	--	.00±.03
Quijandri & Montalvan, 1971	2,351	--	--	-	D+LW	--	--	.28
Hetzer & Miller, 1972	2,539	--	--	M	FS (D)	ROP	--	.05±.04
	2,236	--	--	M	FS (Y)	ROP	--	.12±.04
Johar & Saibaba, 1973	1,826	--	--	-	MW	PHS	--	.13±.06
Kuhlers, 1973	1,904	--	--	M	PB+XB (PC+Y)	--	.0509	.05
Li et al., 1973	--	--	--	-	KH	PHS	--	.10
						MHS	--	.24
Arganosa et al., 1974/75	--	737	231	M	D,L+Y	--	--	.07
Irvin, 1975	--	400	--	M	Y,H+D	IC2	.0452	.65±.13

Table 1. Summary of heritability of phenotypic variance estimates for birth weight (cont'd.)

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Vechionacce et al., 1976	1,134	--	--	M	PB+XB (L+LW)	--	--	.54
	1,094	--	--	M	XB	--	--	.21
Webb & King, 1976	3,600	--	--	M	SSL	PHS	.0841	.31±.13
Young et al., 1977	531	--	--	G	PB+XB (D,Y+H)	PHS	--	.07±.19
Young et al., 1978	2,095	--	292	G	NGP	PHS	--	.16±.16
Hutchens, 1980	737	--	32	G	PB+XB (Mix)	PHS	.0888	1.53±.26
						MHS		.32±.12
Simple average[c]							(11) .0726	(29) .18
Weighted average[c]							(10) .0790	(26) .19

[a]Krider et al. (1946) obtained estimates from a portion of these data.

[b]Weighted average of estimates obtained with ROD, ROS, ROP, PHS, MHS and FS methods.

[c]Number of estimates utilized are in parenthesis.

Table 2. Summary of heritability estimates for weaning weight

Adapted from	Age[a]	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Bywaters, 1937	60	1,633	271	20	M	PC	PHS	--	.04
Comstock et al., 1942	56	172	--	--	-	PC+MN#1	ISR	--	-.19
Baker et al., 1943	56	994	259	62	M	FX (D)	IC1	8.762	.15
Krider et al., 1946	56	749	98	41	M	GS (H)	PHS	7.980	.14
Dickerson & Grimes, 1947	72	567	87	--	M	D	ROP	12.896	.09±.12
							ROS		.09±.09
							ROD		.02±.09
McClung, 1953	63	1,054	--	--	-	FX (D)	ROD	--	.14±.06
Craig et al., 1956[b]	56	2,036	288	124	M	GS (H)	IC1	8.659	.24
Broderick, 1960	--	582	--	--	M	ILW	--	--	.17
Zoellner et al., 1963	42	300	--	17	M	FX (PC)	MID	--	-.15
							MOP	--	-.06±.06
Ward et al., 1964	56	2,693	357	129	M	MN#2+MN#3	PHS	--	.14±.11
							ROS	--	.13±.06
							ISR	--	.27±.07
Kripple et al., 1965	28	1,328	--	--	-	GIL	--	--	.63
Sviben, 1965	28	--	356	--	-	SL	--	--	.16
Noland et al., 1966	56	3,360	411	106	-	FX (PC)	ROS	--	.12±.13
Stanislaw, 1966	56	3,609	457	99	M	PB (D,BT#1+H)	PHS	13.112	.03±.06
		3,077	347	99	M	XB (D,BT#1+H)	PHS	14.640	.19±.09
Reutzel & Sumption, 1968	42	1,192	--	123	G	NGP	PHS	6.570	.33±.07
		800	--	123	G	NGP	ISR		.33±.07
Wong, 1969	56	6,890	--	--	-	PB+XB (MN#1,#2+#3)	PHS	10.922	.19
Berruecos, 1970	56	483	--	55	M	FS (XB)	--	--	.01±.03[c]
Fahmy & Bernard, 1970	56	4,428	780	161	M	Y	IC1	--	.08±.27
							MOP	--	.19±.06
Biedermann et al., 1971	28	3,344	--	--	-	GL	--	--	.53
Edwards & Omtvedt, 1971	42	2,956	--	349	M	COP	ROS	--	.08±.04
							ROD	--	.02±.04
							ROP	--	.05±.03

Table 2. Summary of heritability estimates for weaning weight (cont'd.)

Adapted from	Age[a]	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Quijandria & Montalvan, 1971	--	2,351	--	--	-	D+LW	--	--	.26
Hetzer & Miller, 1972	56	2,539	--	--	M	FS (D)	ROP	--	.09±.03
		2,236	--	--	M	FS (Y)	ROP	--	.07±.04
Siers & Thompson, 1972	56	1,348	--	--	M	PB	PHS	--	.16±.06
Rahnefield, 1973	42	2,912	--	--	M	LC+Y	PHS	8.308	.14±.03
Arganosa et al., 1974/75	35	--	737	231	M	D,L+Y	--	--	.40
Irvin, 1975	42	--	394	--	M	Y,H+D	IC2	3.052	-.02±.10
Vechionacce et al., 1976	28	1,134	--	--	M	PB+XB (L+LW)	--	--	.18
	28	1,094	--	--	M	XB	--	--	.17
Webb & King, 1976	50	2,972	--	--	M	SSL	PHS	8.585	.30±.15
Young et al., 1977	42	531	--	--	G	PB+XB (D,H+Y)	PHS	--	.12±.19
Young et al., 1978	42	2,095	--	292	G	NGP	PHS	--	.18±.15
Hutchens, 1980	42	737	--	32	G	PB+XB (Mix)	PHS	7.470	1.20±.24
							MHS		.80±.15
	Simple average[d]							(11) 9.345	(33) .18
	Weighted average[d]							(10) 10.564	(30) .19

[a]Age at weaning (days).

[b]Krider et al. (1946) obtained estimates from a portion of these data.

[c]Weighted average of estimates obtained with ROD, ROS, ROP, PHS, MHS and FS methods.

[d]Number of estimates are in parenthesis.

Table 3. Summary of heritability estimates for postweaning daily gain

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Lush, 1936	--	287	83	M	L+Y	--	--	.24[a]
Comstock et al., 1942	178	--	--	-	PC+MN#1	ISR	--	.31
Nordskog et al., 1944	2,396	340	110	-	FX	IC1	.0062	.40
	312	--	--	-	--	MID		.21±.24
Blunn & Baker, 1947	358	--	--	M	DJ	IC1	.0043	.18
Dickerson, 1947	746	--	--	M	PB+XB (PC+DL)	IC1	.0050	.31
Dickerson & Grimes, 1947	567	87	--	M	D	ROP	.0094	.43±.10
						ROS		.44
						ROD		.58
Johansson & Korkman, 1951	12,144	--	1,693	M	LW+SL	PHS	.0049	.26
Sutherland, 1958	372	--	--	M	MIX	PHS	.0085	1.02
Cox, 1959	--	--	--	-	--	--	--	.33
Reddy et al., 1959	425	--	--	M	XB (L+PC)	ISR	--	.04
	436	--	--	M	XB (L+PC)	ROP	--	.21
Reimer, 1959	--	412	148	M	MN#1	IC1	.0113	.27
	--	255	104	M	MN#2	IC1	.0108	.50
	--	413	139	M	PC	IC1	.0121	.35
Brinks, 1960	538	--	--	B	MIX	PHS	.0068	.38
Broderick, 1960	582	--	--	M	ILW	--	--	.15
Fowler & Ensminger, 1960	1,705	--	--	M	GSP	REL	--	.51
Locniskar, 1960	936	--	--	M	GIL	--	--	.39
El-Issawi & Rempel, 1961	--	--	--	-	MN#1,#2+#3	ISR	--	.14±.08
						ROD	--	.28±.06
Jonsson & King, 1962	5,996	--	935	M	DL	PHS	--	.45
Smith et al., 1962	1,976	494	200	M	LW	PHS	--	.41±.10
Zoellner et al., 1963	330	--	17	M	FX (PC)	ISR	--	.16
						ROP	--	.22±.13
Ward et al., 1964	2,693	357	129	M	MN#2+#3	PHS	--	.26±.10
						ROS	--	.30±.11
						ISR	--	.38±.09
Kripple et al., 1965	1,328	--	--	-	GIL	--	--	.14
Smith & Russ, 1965	2,296	574	250	M	BL	PHS	--	.41

Table 3. Summary of heritability estimates for postweaning daily gain (cont'd.)

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Biswas et al., 1966	185	--	33	M	XB (D+Y)	PHS	.0083	.77±.37
Stanislaw, 1966	3,087	--	99	M	PB (D,H+BT#1)	PHS	.0101	.28±.06
	2,570	--	99	M	XB (D,H+BT#1)	PHS	.0097	.39±.10
Stockhauser & Boylan, 1966	990	--	--	G	MG	PHS	.0030	.28±.15
	978	--	--	G	MG	ROD		.30±.06
	334	--	--	G	MG	ROS		-.12±.12
	641	--	--	B	MG	PHS	.0036	.28±.18
	641	--	--	B	MG	ROD		.28±.09
	156	--	--	B	MG	ROS		.36±.15
	209	--	--	BO	MG	PHS	.0047	.58±.40
	207	--	--	BO	MG	ROD		.29±.16
	127	--	--	BO	MG	ROS		.26±.21
Reutzel & Sumption, 1968	1,192	--	123	G	NGP	PHS	.0070	.34±.17
	800	--	--	G	NGP	ISR		.22±.09
Roy et al., 1968	1,246	--	--	M	MG	PHS	--	.33±.14
Zeek, 1968	12,425	--	--	M	GIL	--	--	.60
Isler, 1969	5,952	--	--	M	MIX	PHS	.0054	.35±.07
Wong, 1969	6,890	--	--	M	PB+XB (MN#1,#2,#3)	PHS	.0047	.47
Fahmy & Bernard, 1970	4,428	--	161	M	Y	IC1	--	.16±.27
						MOP	--	-.02±.09
Flock, 1970	28,480	--	--	M	DL+GL	IC2	--	.45±.05
						COP	--	.24±.04
Biederman et al., 1971	3,344	--	--	-	GL	--	--	.42
Edwards & Omtvedt, 1971	1,244	--	340	G	COP	ROS	--	.29±.06
						ROD	--	.18±.08
Pavlik et al., 1971	1,544	--	144	-	LB	--	--	.80
	3,456	--	263	-	L	--	--	.81
Sidor & Mojto, 1971	336	--	67	-	CIW	PHS	--	.98
						MHS	--	.80
Hetzer & Miller, 1972	2,539	--	--	M	FS (D)	ROP	--	.17±.04
	2,236	--	--	M	FS (Y)	ROP	--	.33±.04
Johnson, 1973	995	--	--	G	XB (D,H+Y)	PHS	.0070	.37

Table 3. Summary of heritability estimates for postweaning daily gain (cont'd.)

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Molenat, 1973	1,043	--	126	BO	LW	ROS	--	.30±.08
Robison & Berruecos, 1973a	321	--	62	B	--	PHS	.0075	1.11±.27
Marquardt, 1974	1,600	--	--	M	GL	--	--	.20
Pochernyayer et al., 1974	--	--	--	-	RLW	--	--	.35
Clarke et al., 1975	658	--	182	BO	LW+L	PHS	--	1.02±.29
Pumfrey et al., 1975	1,632	--	--	G	NGP	ROD	--	.17±.06
						ROS	--	.13±.04
Gajic et al., 1976	8,590	--	--	G	MIX	--	--	.39
Rahnefield & Garnett, 1976	--	--	--	M	LC+Y	--		.33±.03[b]
Webb & King, 1976	1,068	--	--	M	SSL	PHS	.0121	.26±.13
Young et al., 1977	531	--	--	G	PB+XB (D,H+Y)	PHS	--	1.03±.21
Young et al., 1978[c]	2,095	--	292	G	NGP	PHS	--	.30±.12
McPhee et al., 1979	1,702	--	118	BO	LW+L	PHS	--	.36±.10
Hutchens, 1980	737	--	32	G	PB+XB (Mix)	PHS	.0071	.69±.18
						MHS		.54±.14
Simple average[d]							(23) .0074	(59) .40
Weighted average[d]							(20) .0061	(51) .38

[a]Average of estimates obtained with MHS, PHS and COP methods.

[b]Average of estimates obtained with REL, PHS, ROD and ROS.

[c]Pumfrey et al. (1975) obtained estimates from a portion of these data.

[d]Number of estimates are in parenthesis.

Table 4. Summary of heritability estimates for age at a constant weight

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Johansson & Korkman, 1951	12,144	--	1,693	M	LW+SL	PHS	243.9	.57
Fredeen, 1953	6,876	1,719	644	M	Y	IC3	253.3	.55
Broderick, 1960	582	--	--	M	ILW	--	--	.45
Nowicki, 1960	--	--	--	-	LW	--	--	.45
Sviben, 1965	--	--	--	B	SL	--	--	.07
Arganosa, 1968	210	--	--	B	PB+XB (Mix)	PHS	132.0	.26±.26
	210	--	--	G	PB+XB (Mix)	PHS	141.5	.15±.24
Zeek, 1968	12,425	--	--	M	GIL	--	--	.87
Isler, 1969	5,952	--	--	M	MIX	PHS	74.7	.40±.07[a]
Biederman et al., 1971	3,344	--	--	-	GL	--	--	.14
Edwards & Omtvedt, 1971	1,244	--	340	G	COP	ROS	--	.34±.07
						ROD	--	.19±.12
Klusak, 1972	254	--	19	-	CIW	PHS	--	.23
						MHS	--	1.79
Bus'ko, 1973	97	--	8	-	--	PHS	--	.27
						MHS	--	.54
Johnson, 1973	995	--	--	G	XB (D,H+Y)	PHS	227.9	.18
Pochernyayer et al., 1974	--	--	--	-	RLW	--	--	.50
Moskal, 1975	5,472	--	--	M	CIW	--	--	.87
	2,100	--	--	M	L	--	--	.74
Gajic et al., 1976	8,590	--	--	G	MIX	--	--	.34
Young et al., 1977	531	--	--	G	PB+XB (D,H+Y)	PHS	--	.70±.21
Hutchens, 1980	737	--	32	G	PB+XB (Mix)	PHS	278.4	.60±.17
						MHS		.79±.15
Simple average[b]							(7) 193.1	(20) .47
Weighted average							(7) 207.8	(17) .58

[a]Swiger et al. (1979) reported the heritability estimate.

[b]Number of estimates are in parenthesis.

Table 5. Summary of heritability estimates of live backfat

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Sutherland, 1958	372	--	--	M	MIX	PHS	.1869	1.07
						MHS		1.08
Cox, 1959	--	--	--	-	--	--	--	>1.00
Reddy et al., 1959	425	--	--	M	XB (L+PC)	ISR	--	.35
	436	--	--	M	XB (L+PC)	ROP	--	.10
Brinks, 1960	538	--	--	B	MIX	PHS	.2490	1.08
Dillard et al., 1962	419	--	--	M	FX	REL	--	.49
						PHS	--	.09
						MHS	--	.81
						AMP	--	.45
Zoellner et al., 1963	679	--	17	M	FX (PC)	REL	--	.74
	330	--	13	M	FX (PC)	MID	--	.93
	330	--	--	M	FX (PC)	ROP	--	.83±.14
Cox, 1964	7,642	--	--	M	D+H	IC2	.2594	.25±.06
						ROD		.22±.02
Gray et al., 1964	441	--	18	M	FX (PC)	IC1	--	.35±.16
Stanislaw, 1966	1,230	--	89	M	PB	PHS	.1677	.55±.12
	2,569	--	99	M	XB	PHS	.1677	.47±.13
Stockhauser & Boylan, 1966	558	--	--	G	MG	PHS	.3420	53±.68
	334	--	--	G	MG	ROD		.13±.09
	334	--	--	G	MG	ROS		.10±.08
	335	--	--	B	MG	PHS	.3680	-.07±.22
	156	--	--	B	MG	ROD		.17±.13
	156	--	--	B	MG	ROS		-.05±.11
	209	--	--	BO	MG	PHS	.4130	.56±.44
	127	--	--	BO	MG	ROD		.25±.15
	127	--	--	BO	MG	ROS		.12±.14
Hetzer & Harvey, 1967	1,929	313	189	M	FS (D)	ROP	--	.55
						REL	--	.48
	1,647	252	157	M	FS (Y)	ROP	--	.60
						REL	--	.41
Louca & Robison, 1967	293	--	--	BO	PB (D+Y)	PHS	.2130	.35±.34
	381	--	--	B	PB (D+Y)	PHS	.2630	.14±.15

Table 5. Summary of heritability estimates of live backfat (cont'd.)

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
Louca & Robison, 1967	735	--	--	G	PB (D+Y)	PHS	.2870	.33±.18
	3,275	--	--	B	XB (D+Y)	PHS	.2720	.22±.06
	3,357	--	--	G	XB (D+Y)	PHS	.2510	.09±.05
Arganosa, 1968	652	--	--	M	PB+XB (Mix)	PHS	.1418	.62±.19
Gray et al., 1968	1,828	--	67	M	PC	REL	--	.32±.09
						ISR	--	.56±.09
Reutzel & Sumption, 1968	1,192	--	123	G	NGP	PHS	.1502	.27±.16
	800	--	--	G	NGP	ISR		.33±.07
Wong, 1969	6,890	--	--	M	PB+XB (MN#1,#2,#3)	PHS	.0928	.22
Berruecos et al., 1970	483	--	55	M	FS (XB)	--	--	.38±.02[a]
						REL	--	.27±.09
Edwards & Omtvedt, 1971	1,108	--	314	G	COP	ROS	--	.30±.07
						ROD	--	.31±.06
Hetzer & Miller, 1972[b]	2,539	--	--	M	FS (D)	ROP	--	.56±.04
	2,236	--	--	M	FS (Y)	ROP	--	.50±.05
Johnson, 1973	995	--	--	G	XB (D,H+Y)	PHS	.2951	-.01
Molenat, 1973	1,043	--	126	BO	LW	ROS	--	.70±.07
Marquardt, 1974	1,600	--	--	M	GL	--	--	.35
Mikami et al., 1974	187	--	13	-	L	ISR	--	.50
Clarke et al., 1975	658	--	182	BO	L+LW	PHS	--	.86±.28
Kupriyanova & Leshchenya, 1975	547	--	--	G	--	REL	--	.33
Pumfrey et al., 1975	1,253	--	--	G	NGP	ROD	--	.46±.05
						ROS	--	.61±.08
						ROP	--	.53±.07
Gajic et al., 1976	8,590	--	--	G	MIX	--	--	.41
Webb & Jing, 1976	1,727	--	--	M	SSL	PHS	.0961	.63±.13
Walters et al., 1977	3,583	--	--	G	LW	PHS	--	.49
	2,810	--	--	G	L	PHS	--	.51
	5,081	--	--	G	XB	PHS	--	.45
Young et al., 1978[c]	2,095	--	292	G	NGP	PHS	--	.89±.13

Table 5. Summary of heritability estimates of live backfat (cont'd.)

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method	σ^2	h^2
McPhee et al., 1979	1,702	--	118	BO	LW+L	PHS	--	.47±.11
Hutchens, 1980	737	--	32	G	PB+XB (Mix)	PHS	.1189	.51±.15
						MHS		.55±.14
Simple average[d]							(19) .2281	(39) .44
Weighted average[d]							(19) .2015	(39) .39

[a]Weighted average of estimates obtained with ROS, ROD, ROP, FS, MHS, PHS methods.

[b]Hetzer & Harvey (1967) obtained estimates from a portion of these data.

[c]Pumfrey et al. (1975) obtained estimates from a portion of these data.

[d]Number of estimates are in parenthesis.

Table 6. Summary of heritability estimates for age and weight at puberty in gilts

Adapted from	N_o	N_1	N_s	Breed or line	Method	Age σ^2	Age h^2	Weight σ^2	Weight h^2
Reutzel & Sumption, 1968	1,192	312	123	NGP	PHS	628.0	-.20±.14	231.0	.17±.14
	800	--	--	NGP	ISR		.49±.11		.52±.08
Legault, 1973	304	--	65	L+LW	PHS	--	.46	--	.44
Cunningham et al., 1974[a]	137	--	--	NGP	ROD	--	.64±.30	--	--
	68	--	--	NGP	ROD	--	-.28±.36	--	--
Pumfrey et al., 1975	1,609	--	--	NGP	ROD	--	.38±.04	--	.34±.06
Young et al., 1978[b]	2,095	--	292	NGP	PHS	--	.53±.13	--	.27±.12
Hutchens, 1980	737	--	32	PB+XB	PHS	--	.19±.09	--	.35±.12
				(Mix)	MHS	473.4	.40±.13	98.3	.26±.12
Simple average[c]						(2) 550.7	(6) .28	(2) 114.7	(4) .33
Weighted average[c]						(2) 568.9	(6) .33	(2) 180.3	(4) .31

[a]Estimates involve different animals.

[b]Pumfrey et al. (1975) obtained estimates from a portion of these data.

[c]Number of estimates utilized are in parenthesis.

Table 7. Summary of correlation estimates between birth weight and weaning weight

Adapted from	Age[a]	N_o	N_s	Sex	Breed or line	Method[b]	r_g	r_p
Lush & Culbertson, 1931	--	--	--	-	--	--	--	.51
Dickerson & Grimes, 1947	72	567	87	M	--	--	.29	--
Blunn et al., 1954	56	1,894	--	M	PB+XB	--	--	.46
Noland et al., 1966[c]	56	451	23	M	PC	ROS	.68	--
		240	19	M	PC	ROS	.36	--
Omtvedt et al., 1966	42	3,775	--	M	PB+XB (Mix)	--	--	.54
Jensen et al., 1968	42	16,000	429	M	D+H	--	--	.49
Fahmy & Bernard, 1970	56	5,120	-	M	Y	IC1	.45	.71
						MOP	.63	--
Edwards & Omtvedt, 1971	42	1,108	--	G	COP	ROD	.14	.51
						ROP	-.10	--
Fahmy & Bernard, 1972	42	704	--	M	Y	--	--	.42
Revelle & Robison, 1973	56	180	--	G	PB+XB (D+Y)	--	--	.36
Young et al., 1974	42	241	--	G	PB (D,H+Y)	--	--	.38
		103	--	G	XB (D,H+Y)	--	--	.39
Irvin, 1975	42	--	--	M	Y,H+D	IC2	--	.36
Young et al., 1977[d]	42	531	--	G	PB+XB (D,H+Y)	PHS	-1.94	.38
Young et al., 1978	42	2,095	292	G	NGP	PHS	.36	.56
Hutchens, 1980	42	737	32	G	PB+XB (Mix)	PHS	.54	.51
Simple average[e]							(8) .11	(12) .48
Weighted average[e]							(8) .32	(10) .53

[a]Age at weaning (days).

[b]Utilized to obtain genetic variance and covariance.

[c]Estimates involve different animals.

[d]Young et al. (1974) published estimates from a portion of these data.

[e]Number estimates utilized are in parenthesis.

Table 8. Summary of correlation estimates between birth weight and postweaning daily gain

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method[a]	r_g	r_p
Dickerson & Grimes, 1947	567	87	--	M	D	FS	.02	--
Roy et al., 1968	1,246	--	--	M	MG	PHS	.07	.15
Fahmy & Bernard, 1970	4,428	--	154	M	Y	IC1	.29	.90
						MOP	.34	
Edwards & Omtvedt, 1971	1,244	--	308	G	COP	ROD	-.95	.27
						ROP	-.45	
Young et al., 1974	103	--	--	G	XB (D,H+Y)	--	--	.22
	241	--	--	G	PB (D,H+Y)	--	--	.19
Young et al., 1977[b]	531	--	--	G	PB+XB (D,H+Y)	PHS	.25	.20
Young et al., 1978	2,095	--	292	G	NGP	PHS	.87	.29
Hutchens, 1980	737	--	32	G	PB+XB (Mix)	PHS	.50	.29
	Simple average[c]						(7) .19	(6) .35
	Weighted average						(7) .29	(6) .56

[a]Method utilized to obtain genetic components of variance and covariance.

[b]Young et al. (1974) obtained estimates from a portion of these data.

[c]Number of estimates utilized are in parenthesis.

Table 9. Summary of correlation estimates between birth weight and age at a constant weight

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method[a]	r_g	r_p
Fahmy & Bernard, 1970	4,428	--	154	M	Y	IC1	-.96	-.04
Edwards & Omtvedt, 1971	1,244	--	340	G	COP	ROD	1.19	-.36
						ROP	.43	
Young et al., 1974	103	--	--	G	XB (D,H+Y)	--	--	-.16
	241	--	--	G	PB (D,H+Y)	--	--	-.31
Young et al., 1977[b]	531	--	--	G	PB+XB (D,H+Y)	PHS	-.39	-.30
Hutchens, 1980	737	--	32	G	PB+XB (Mix)	PHS	-.61	-.42
	Simple average[c]						(4) -.29	(4) -.28
	Weighted average						(4) -.56	(4) -.16

[a]Method utilized to obtain genetic components of variance and covariances.

[b]Young et al. (1974) obtained estimates from a portion of these data.

[c]Number of estimates utilized are in parenthesis.

Table 10. Summary of correlation estimates between birth weight and live backfat

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method[a]	r_g	r_p
Louca & Robison, 1967	293	--	--	BO	PB (D+Y)	PHS	>1.00	-.38
	381	--	--	B	PB (D+Y)	PHS	<-1.00	-.10
	735	--	--	G	PB (D+Y)	PHS	-.22	-.19
	3,275	--	--	B	XB (D+Y)	PHS	-.49	-.06
	3,357	--	--	G	XB (D+Y)	PHS	<-1.00	-.11
Jensen et al., 1968	16,000	2,000	429	M	D+H	--	--	-.13
Roy et al., 1968	469	--	--	M	MG	PHS	.17	-.20
Edwards & Omtvedt, 1971	1,108	--	314	G	COP	ROD	-.26	-.18
						ROP	-.73	
Hetzer & Miller, 1972	2,539	--	--	M	FS (D)	REL	-.63	-.15
						ROP	-.46	
	2,236	--	--	M	FS (Y)	REL	-.17	-.15
						ROP	-.37	
Revelle & Robison, 1973	180	--	--	G	PB+XB (D+Y)	--	--	-.09
Young et al., 1974	103	--	--	G	XB (D,Y+H)	--	--	-.23
	241	--	--	G	PB (D,Y+H)	--	--	-.12
Young et al., 1978	2,095	--	292	G	NGP	PHS	-.28	-.05
Hutchens, 1980	737	--	32	G	PB+XB (Mix)	PHS	.19	-.03
Simple average[b]							(8) -.24	(15) -.14
Weighted average							(8) -.35	(15) -.12

[a]Method utilized to obtain genetic variances and covariances.

[b]Number of estimates utilized are in parenthesis.

Table 11. Summary of correlation estimates between weaning weight and postweaning daily gain

Adapted from	Age[a]	N_o	N_1	N_s	Sex	Breed or line	Method[b]	r_g	r_p
Bennett & Coles, 1946	70	220	--	--	B	Y	--	--	.32
		181	--	--	G	Y	--	--	.16
Dickerson & Grimes, 1947	72	567	87	--	M	D	FS	.65	.44
Warren & Dickerson, 1952	56	527	--	--	M	MIX	--	--	.38
Zoellner et al., 1963	42	341	--	--	M	PC	ROP	--	.40
Ward et al., 1964	56	2,693	357	129	M	MN#2+MN#3	ROS	.49	.37
							ISR	.84	--
							PHS	.58	--
Stanislaw, 1966	56	3,087	443	99	M	PB (H,D+BT#1)	PHS	.29	--
		2,570	335	99	M	XB (D,D+BT#1)	PHS	.20	--
Reutzel & Sumption, 1968	42	1,192	--	123	G	NGP	PHS	.62	.36
Fahmy & Bernard, 1970	56	4,428	--	161	M	Y	IC1	.48	.98
							MOP	.15	--
Edwards & Omtvedt, 1971	42	1,244	--	340	G	COP	ROS	1.47	.32
							ROD	1.09	--
							ROP	.69	--
Rahnefield, 1973	42	2,912	--	--	M	LC+Y	PHS	1.29	--
Young et al., 1974	42	103	--	--	G	XB (D,H+Y)	--	--	.34
		241	--	--	G	PB (D,H+Y)	--	--	.29
Siers et al., 1975a	56	114	--	--	M	Y	--	--	.31
Siers et al., 1975b	56	66	--	--	M	Y	--	--	-.02
Young et al., 1977c	42	531	--	--	G	PB+XB (D,H+Y)	PHS	.82	.30
Young et al., 1978	42	2,095	--	292	G	NGP	PHS	.34	.35
Hutchens, 1980	42	737	--	32	G	PB+XB (Mix)	PHS	.49	.31
Simple average[d]								(11) .55	(14) .36
Weighted average[d]								(11) .51	(14) .54

[a]Age at weaning (days).

[b]Method utilized to obtain genetic variances and covariances.

[c]Young et al. (1974) obtained estimates from a portion of these data.

[d]Number of estimates are in parenthesis.

Table 12. Summary of correlation estimates between weaning weight and age at a constant weight

Adapted from	Age[a]	N_o	N_1	N_s	Sex	Breed or line	Method[b]	r_g	r_p
Fahmy & Bernard, 1970	56	4,428	--	161	M	Y	IC1	-.97	-.65
Edwards & Omtvedt, 1971	42	1,244	--	340	G	COP	ROS	-1.54	-.54
							ROD	1.32	--
							ROP	-.80	--
Young et al., 1974	42	103	--	--	G	XB (D,H+Y)	--	--	.52
		241	--	--	G	PB (D,H+Y)	--	--	-.53
Young et al., 1977[c]	42	531	--	--	G	PB+XB (D,H+Y)	PHS	-1.02	-.54
Hutchens, 1980	42	737	--	32	G	PB+XB (Mix)	PHS	-.88	-.58
Simple average[d]								(4) -.80	(4) -.58
Weighted average[d]								(4) -.85	(4) -.61

[a]Age at weaning (days).

[b]Method utilized to obtain genetic variances and covariances.

[c]Young et al. (1974) obtained estimates utilizing a portion of these data.

[d]Number of estimates are in parenthesis.

Table 13. Summary of correlation estimates between weaning weight and live backfat

Adapted from	Age[a]	N_o	N_1	N_s	Sex	Breed or line	Method[b]	r_g	r_p
Zoellner et al., 1963	42	330	--	--	M	FX (PC)	ROP	--	-.24
Stanislaw, 1966	56	2,157	--	98	M	PB	PHS	-.05	--
		1,229	--	88	M	XB	PHS	-.61	--
Jensen et al., 1968	42	16,000	2,000	429	M	D+H	--	--	-.08
Reutzel & Sumption, 1968	42	1,192	312	123	G	NGP	PHS	-.77	-.29
Edwards & Omtvedt, 1971	42	1,108	--	314	M	COP	ROS	.44	-.08
							ROD	.00	--
							ROP	.22	
Hetzer & Miller, 1972	56	2,539	--	--	M	FS (D)	REL	-.40	-.09
							ROP	-.31	--
		2,236	--	--	M	FS (Y)	REL	-.06	-.08
							ROP	-.22	--
Revelle & Robison, 1973	56	180	--	--	G	PB+XB (D+Y)	--	--	-.02
Young et al., 1974	42	103	--	--	G	XB (D,H+Y)	--	--	-.03
		241	--	--	G	PB (D,H+Y)	--	--	.00
Young et al., 1978	42	2,095	--	292	G	NGP	PHS	.11	-.07
Hutchens, 1980	42	737	--	32	G	XB+PB (Mix)	PHS	-.01	-.04
Simple average[c]								(8) -.20	(11) -.09
Weighted average[c]								(8) -.19	(11) -.09

[a]Age at weaning (days).

[b]Method utilized to obtain genetic variances and covariances.

[c]Number of estimates are in parenthesis.

Table 14. Summary of correlation estimates between postweaning daily gain and age at a constant weight

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method[a]	r_g	r_p
Isler, 1969	5,952	--	--	M	MIX	PHS	-1.00	-.98
Fahmy & Bernard, 1970	4,428	--	154	M	Y	IC1	-1.01	-.86
Edwards & Omtvedt, 1971	1,244	--	340	G	COP	ROS	-.98	-.91
						ROD	-1.01	
						ROP	-.98	
Young et al., 1974	103	--	--	G	XB (D,H+Y)	--	--	-.96
	241	--	--	G	PB (D,H+Y)	--	--	-.91
Siers, 1975a	114	--	10	M	Y	--	--	-.81
Siers, 1975b	66	--	--	M	Y	--	--	-.85
Gajic, et al., 1976	8,590	--	--	G	MIX	--	-.80	--
Young et al., 1977[b]	531	--	--	G	XB+PB (D,H+Y)	PHS	-.96	-.89
Hutchens, 1980	737	--	--	G	XB+PB (Mix)	PHS	-.73	-.83
Simple average[c]							(6) -.92	(7) -.88
Weighted average							(6) -.91	(7) -.92

[a]Method utilized to obtain genetic variances and covariances.

[b]Young et al. (1974) obtained earlier estimates from a portion of these data.

[c]Number of estimates utilized are in parenthesis.

Table 15. Summary of correlation estimates between postweaning daily gain and live backfat

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method[a]	r_g	r_p
Sutherland, 1958	372	--	--	M	MIX	PHS	.27	.55
Brinks, 1960	583	--	--	B	MIX	PHS	.20	-.53
Zoellner et al., 1963	330	--	--	M	PC	ROP	.70	.08
Stanislaw, 1966	2,157	416	98	M	PB	PHS	-.07	--
	1,230	241	88	M	XB	PHS	-.39	--
Stockhauser & Boylan, 1966	558	--	--	G	MG	PHS	-.54	--
	334	--	--	G	MG	ROP	-.19	--
	156	--	--	B	MG	ROP	.44	--
	209	--	--	BO	MG	PHS	-.53	--
	127	--	--	BO	MG	ROP	-.52	--
Reutzel & Sumption, 1968	1,192	--	123	G	NGP	PHS	-.98	-.34
Roy et al., 1968	469	--	--	M	MG	--	--	.07
Edwards & Omtvedt, 1971	1,108	--	314	G	COP	ROS	-.31	.03
						ROD	.65	
						ROP	.09	
Hetzer & Miller, 1972	2,539	--	--	M	GS (D)	REL	-.06	.13
						ROP	.09	
	2,236	--	--	M	FS (Y)	REL	.23	.04
						ROP	-.12	
Robison & Berruecos, 1973[b]	321	--	62	B	--	PHS	.37	--
Young et al., 1974	103	--	--	G	XB (D,H+Y)	--	--	.07
	241	--	--	G	PB (D,H+Y)	--	--	.16
Clarke et al., 1975	658	--	182	BO	L+LW	PHS	-.17	-.26
Young et al., 1978	2,095	--	292	G	NGP	PHS	-.32	-.07
McPhee et al., 1979	1,702	--	118	BO	LW+L	PHS	.55	.10
Hutchens, 1980	737	--	32	G	PB+XB (Mix)	PHS	.16	.05
Simple average[b]							(17) .00	(14) .01
Weighted average							(17) -.05	(14) .00

[a]Method utilized to obtain genetic variances and covariances.

[b]Number of estimates utilized are in parenthesis.

Table 16. Summary of correlation estimates between age at a constant weight and live backfat

Adapted from	N_o	N_1	N_s	Sex	Breed or line	Method[a]	r_g	r_p
Omtvedt et al., 1967	228	--	--	M	LX (H)	--	--	-.18
Arganosa, 1968	554	--	--	M	PB+XB (Mix)	PHS	-.20	-.15
Edwards & Omtvedt, 1971	1,108	--	314	G	COP	ROS	.14	.02
						ROD	-.49	
						ROP	-.08	
Young et al., 1974	103	--	--	G	XB (D,H+Y)	--	--	-.07
	241	--	--	G	PB (D,H+Y)	--	--	-.07
Naveau et al., 1977	13,810	--	--	-	LW+L	--	.19	--
	725	--	--	-	H	--	-.32	--
Hutchens, 1980	737	--	32	G	PB+XB (Mix)	PHS	.00	.01
Simple average[b]							(5) -.09	(6) -.07
Weighted average							(5) .13	(6) -.04

[a]Method utilized to obtain genetic variances and covariances.

[b]Number of estimates utilized are in parenthesis.

Table 17. Summary of correlation estimates between age at puberty and growth characteristics in gilts

Item	Adapted from: Warnick et al., 1951	Reutzel & Sumption, 1968	Revelle & Robison, 1973	Cunningham et al., 1974[b]		Young et al., 1978	Hutchens, 1980	Weighted average[c]	Simple average[c]
N_o	112	1,192	180	137	68	2,095	737		
N_1	--	312	--	--	--	--	--		
N_s	--	123	--	--	--	292	32		
Breed or line	CW+Y	NGP	PB+XB (D+Y)	NGP	NGP	NGP	PB+XB (Mix)		
Method[a]	--	--	--	--	--	PHS	PHS		
Birth weight r_g	--	--	--	--	--	-.14	-.07	(2) -.12	(2) -.11
Birth weight r_p	--	--	-.21	--	--	.01	-.09	(3) -.03	(3) -.10
Age at weaning (days).	56	42	56	42	42	42	42		
Weaning weight r_g	--	--	--	--	--	-.04	-.25	(2) -.09	(2) -.15
Weaning weight r_p	-.54	-.10	-.23	-.25	-.32	-.09	-.19	(7) -.13	(7) -.25
Postweaning daily gain r_g	--	--	--	--	--	-.33	-.38	(2) -.34	(2) -.36
Postweaning daily gain r_p	--	-.18	--	-.30	-.57	-.15	-.34	(5) -.20	(5) -.31

Table 17. Summary of correlation estimates between age at puberty and growth characteristics in gilts (cont'd.)

Item	Adapted from: Warnick et al., 1951	Reutzel & Sumption, 1968	Revelle & Robison, 1973	Cunningham et al., 1974[b]		Young et al., 1978	Hutchens, 1980	Weighted average[c]	Simple average[c]
Age at a constant weight r_g	--	--	--	--	--	--	.56	.56	.56
Age at a constant weight r_p	--	--	--	--	--	--	.38	.38	.38
Live backfat r_g	--	--	--	--	--	.00	.27	(2) .07	(2) .14
Live backfat r_p	--	.08	.22	-.02	-.11	.06	.01	(6) .06	(6) .04

[a]Method utilized to obtain genetic variances and covariances.

[b]Estimates involve different animals.

[c]Number of estimates utilized are in parenthesis.

Table 18. Summary of correlation estimates between weight at puberty and growth characteristics in gilts

Item	Adapted from: Reutzel & Sumption, 1968	Young et al., 1978	Hutchens, 1980	Weighted average[b]	Simple average[b]
N_o	1,192	2,095	737		
N_1	312	--			
N_s	123	292	32		
Breed or line	NGP	NGP	PB+XB (Mix)		
Method[a]	PHS	PHS	PHS		
Age at weaning (days).	42	42	42		
Birth weight r_g	--	.04	.46	(2) .15	(2) .25
Birth weight r_p	--	.27	.24	(2) .26	(2) .26
Weaning weight r_g	.70	.01	.69	(3) .34	(3) .47
Weaning weight r_p	.29	.28	.29	(3) .28	(3) .29
Postweaning daily gain r_g	1.01	.19	.81	(3) .55	(3) .67
Postweaning daily gain r_p	.43	.36	.34	(3) .38	(3) .38

Table 18. Summary of correlation estimates between weight at puberty and growth characteristics in gilts (cont'd.)

Item	Adapted from: Reutzel & Sumption, 1968	Young et al., 1978	Hutchens, 1980	Weighted average[b]	Simple average[b]
Age at a constant weight r_g	--	--	-.70	(1) -.70	(1) -.70
Age at a constant weight r_p	--	--	-.38	(1) -.38	(1) -.38
Live backfat r_g	-.40	-.11	.28	(3) -.12	(3) -.08
Live backfat r_p	-.13	-.12	.01	(3) -.10	(3) -.08

[a]Method utilized to obtain genetic variances and covariances.

[b]Number of estimates utilized are in parenthesis.

Table 19. Summary of correlation estimates between age at puberty and weight at puberty in gilts

Adapted from	N_o	N_1	N_s	Breed or line	Method[a]	r_g	r_p
Phillips & Zeller, 1943	63	--	--	PC	--	--	.51
Gossett & Sorenson, 1959	52	--	--	D,H,PC	--	--	.45
Obannon et al., 1966	72	--	--	XB	--	--	.46
Reutzel & Sumption, 1968	1,192	312	123	NGP	PHS	--	.62
Young et al., 1978	2,095	--	292	NGP	PHS	.90	.68
Hutchens, 1980	737	--	32	PB+XB (D,Y,L+S)	PHS	-.03	.54
Simple average[b]						(2) .44	(6) .54
Weighted average						(2) .66	(6) .63

[a]Method utilized to obtain genetic variances and covariances.

[b]Number of estimates utilized are in parenthesis.

Table 20. Summary of heritability and correlation averages[a]

	Birth weight (Kg)	Weaning weight (Kg)	Postweaning daily gain (Kg)	Age at a constant weight (Days)	Live backfat (cm)	Age at puberty (Days)	Weight at puberty (Kg)
Birth weight	.19	.32	.27	-.56	-.35	-.12	.15
Weaning weight	.53	.19	.51	-.85	-.19	-.09	.34
Postweaning daily gain	.53	.54	.38	-.91	-.05	-.34	.55
Age at a constant weight	-.16	-.61	-.92	.58	-.13	.56	-.70
Live backfat	-.12	-.09	-.00	-.04	.39	.07	-.12
Age at puberty	-.03	-.13	-.20	.38	.06	.33	.66
Weight at puberty	.26	.28	.38	-.38	-.10	.63	.31

[a]Heritabilities are on the diagonal, genetic correlations above the diagonal and phenotypic correlations below the diagonal.

Table 21. Summary of variance and covariance averages[a]

Trait		Birth weight (Kg)	Weaning weight (Kg)	Postweaning daily gain (Kg)	Age at a constant weight (Days)	Live backfat (cm)	Age at puberty (Days)	Weight at puberty (Days)
Birth weight	G	.0150	.0555	.0016	-.7529	-.0120	-.201	.137
	P	.0790	.4773	.0042	-.5267	-.0049	-1.348	.981
Weaning weight	G		2.007	.0347	13.22	-.0755	-1.747	3.60
	P		10.564	.1371	-28.58	-.0429	-10.121	12.27
Postweaning daily gain	G			.0023	-.4791	-.0007	-.223	.197
	P			.0061	-1.0358	.0000	-.373	.399
Age at a constant weight	G				120.5	-.4001	84.2	-57.5
	P				207.8	-.2588	130.7	-73.6
Live backfat	G					.0786	.269	-.252
	P					.2015	.642	-.603
Age at puberty	G						187.7	67.6
	P						568.9	201.8
Weight at puberty	G							55.9
	P							180.3

[a]Genetic and phenotypic variances are on the diagonal; covariances are above the diagonal.

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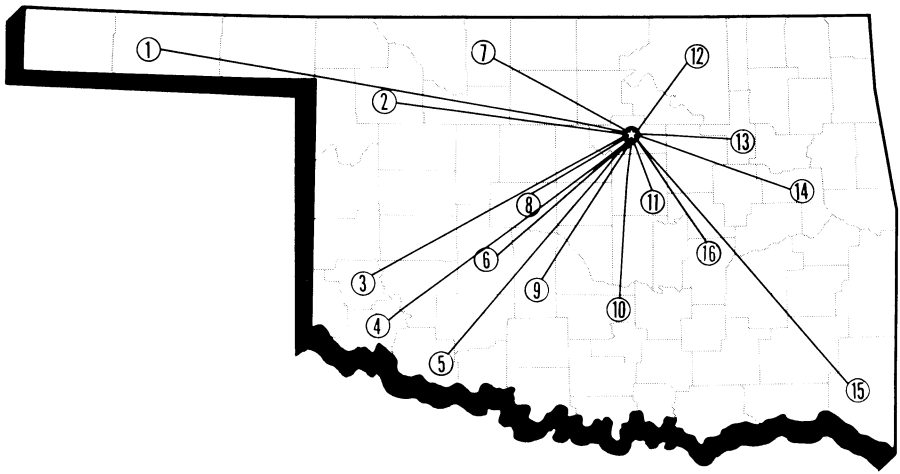

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1. Panhandle Research Station — *Goodwell*
2. Southern Great Plains Field Station — *Woodward*
3. Sandyland Research Station — *Mangum*
4. Irrigation Research Station — *Altus*
5. Southwest Agronomy Research Station — *Tipton*
6. Caddo Research Station — *Ft. Cobb*
7. North Central Research Station — *Lahoma*
8. Southwestern Livestock and Forage Research Station — *El Reno*
9. South Central Research Station — *Chickasha*
10. Agronomy Research Station — *Stratford*
11. Pecan Research Station — *Sparks*
12. Veterinary Research Station — *Pawhuska*
13. Vegetable Research Station — *Bixby*
14. Eastern Research Station — *Haskell*
15. Kiamichi Field Station — *Idabel*
16. Sarkeys Research and Demonstration Project — *Lamar*