

FOODS AND CARCASS **EVALUATION**

Carcass Trends in an Oklahoma Youth Barrow Show

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Story in Brief

Data from 803 barrows—97 Berkshire, 104 Chester White, 117 Duroc, 112 Hampshire, 90 Poland China, 70 Spot, 101 Yorkshire and 112 Crossbreds—slaughtered in the Oklahoma City 4-H and FFA Livestock Shows from 1972 to 1979 were analyzed to determine the average change in carcass traits over time. The barrows were the top end of each respective breed selected by a judge in the live show.

Average increase in carcass length per year for all breeds was .284 in. ($P < .01$) with each individual breed group showing significant increases. All breeds tended to decrease in loin eye area with the average change being a decrease of .098 sq. in. per year with only the Yorkshire having a significant decrease ($P < .05$) of .187 sq. in. Little change ($-.002$ in. per year) was noted over time in backfat thickness except for Spots which had an average increase of .016 in. ($P < .05$ per year). All breeds except the Berkshire decreased in percent ham with the average change across breeds being .090.

Introduction

Many individuals involved in the swine industry, including swine producers, educators, meat processors and others, have expressed concern over the apparent change in the type of animal selected by live show judges in barrow shows. These barrows appeared to be longer, taller, larger frame and less bulging in their muscling and are thought by many to be less desirable in carcass merit. Thus, data were analyzed on the barrows slaughtered in the Oklahoma City 4-H and FFA Livestock Shows from 1972 to 1979 to determine if changes had occurred over time in various carcass measurements.

Materials and Methods

The Oklahoma City 4-H and FFA Livestock Show has from 1400 to 2000 barrows exhibited each year. From 1972 to 1979, the top three to five animals of each breed weight class were slaughtered. The actual number slaughtered per breed weight class was the same within any one given year. However, the number slaughtered per breed each year varied depending on the number of weight classes per breed.

The barrows were slaughtered at Cornett Packing Company, Oklahoma City, and processed at Schwab's Meats, Oklahoma City. Adjusted slaughter weights, carcass length, backfat thickness, loin eye area, percent ham and ham-loin index were obtained.

The adjusted slaughter weight was based on using cold carcass weights and a standard dressing percentage of 71.7, 72.0, 72.4, and 72.7 percent for carcasses weighing 143 lb and below, 144-168, 169-176 and 177 lb and up, respectively. The average adjusted slaughter weights were 221.2, 223.6, 224.7, 235.1, 251.8, 253.0, 241.6 and 242.9 lb for years 1972 to 1979, respectively. Increases in maximum weights allowed in the show in 1975 and 1976 account for the marked increases in adjusted slaughter weights for years 1975 and 1976. Carcass length, backfat thickness and loin eye area were adjusted to a 220-lb equivalent each year using adjustments recommended by the National Association of Swine Records.

Results and Discussion

Records on 803 barrows that were slaughtered from 1972 to 1979 were analyzed (Table 1). The Spot breed was not recognized as a separate breed class until 1974. Prior to 1974 Spots were considered Polands and were in the Poland class.

The average adjusted length for barrows of each breed and each year is present in Table 2. The overall average each year for all the tables does not include the Spots since they were not represented each year. There has been a general increase in carcass length over time, probably reflecting the increased emphasis by purebred breeders, live show judges and others to produce a longer hog.

The average adjusted loin eye area and adjusted backfat thickness for barrows of each breed and each year are shown in Tables 3 and 4, respectively. A definite trend in decreased loin eye areas is noted from 1975 to 1979. Less obvious change seems to be occurring for backfat thickness.

The average percent ham and ham-loin index values for barrows of each breed and each year are shown in Tables 5 and 6, respectively. Definite trends are not obvious.

To better estimate the phenotypic time trends that have occurred since 1972, the breed means for each year were regressed to estimate the average change in performance per year for each trait measured. These regression coefficients are presented in Table 7. Average increase in carcass length per year for all breeds was .284 in. ($P < .01$) with each individual breed group showing significant increase.

All breeds tended to decrease in loin eye area with the average change being a decrease of .098 sq. in. per year with only the Yorkshires having a significant decrease ($P < .05$) of .187 sq. in. per year. Little change ($-.002$ in. per year) was noted over time in backfat thickness except for the Spot breed which had an average increase of .016 in. ($P < .05$) per year. All breeds except the Berkshire decreased in percent ham with the average change across breeds being .09. All breeds decreased in ham-loin index over time with an average change of 1.854.

Table 1. Number of barrows of each breed slaughtered each year

Breed	Year of show								Total
	1972	1973	1974	1975	1976	1977	1978	1979	
Berkshire	12	9	14	14	12	12	12	12	97
Chester	15	13	15	15	12	12	12	10	104
Duroc	15	13	14	15	12	12	20	16	117
Hampshire	15	15	15	15	12	11	16	13	112
Poland	14	12	5	14	11	12	11	11	90
Spot	—	—	9	15	12	12	12	10	70
Yorkshire	13	13	15	15	11	12	13	9	101
Crossbred	14	15	15	15	12	12	15	14	112
Total	98	90	102	118	94	95	111	95	803

Table 2. Average adjusted carcass length for pigs of each breed for each year (in.)

Breed	Year of show								Overall avg.
	1972	1973	1974	1975	1976	1977	1978	1979	
Berkshire	31.43	31.30	31.66	31.34	32.57	32.38	32.70	33.21	32.07
Chester White	31.37	31.58	31.96	31.34	31.95	32.03	32.51	33.12	31.98
Duroc	30.93	31.32	31.72	31.34	32.44	32.53	33.31	33.35	32.12
Hampshire	31.21	31.53	32.18	31.63	32.08	32.48	33.01	33.28	32.17
Poland	30.66	30.94	31.83	30.78	31.52	32.24	32.22	32.57	31.60
Spot			32.05	31.53	32.32	32.59	32.93	33.15	32.43
Yorkshire	31.79	32.38	32.46	32.13	32.90	32.88	33.78	34.31	32.83
Crossbred	31.15	31.64	31.83	31.36	32.15	32.42	33.25	33.14	32.12
Overall avg. ^a	31.22	31.53	31.95	31.42	32.23	32.42	32.97	33.28	

^aSpot breed not included since Spots were not represented each year.

Table 3. Average adjusted loin eye are of pigs of each breed for each year (sq. in.)

Breed	Year of show								Overall avg.
	1972	1973	1974	1975	1976	1977	1978	1979	
Berkshire	5.76	5.33	5.87	5.98	5.47	5.06	6.01	4.98	5.56
Chester White	5.98	5.51	5.79	5.82	5.69	5.51	5.90	4.83	5.63
Duroc	6.08	5.42	5.60	5.46	5.84	5.31	6.01	5.26	5.62
Hampshire	6.59	5.81	6.27	6.20	6.02	5.41	6.38	5.29	6.00
Poland	6.02	5.56	5.13	6.30	5.92	5.48	5.71	4.94	5.63
Spot			5.50	5.87	5.42	5.17	5.64	4.40	5.33
Yorkshire	5.98	5.78	5.48	5.99	5.49	5.43	5.50	4.03	5.46
Crossbred	6.40	5.94	6.36	6.62	5.80	5.74	6.22	4.91	6.00
Overall avg. ^a	6.12	5.62	5.79	6.05	5.75	5.42	5.96	4.89	

^aSpot breed not included since Spots were not represented each year.

Table 4. Average adjusted backfat thickness of pigs of each breed for each year (in.)

Breed	Year of show								Overall avg.
	1972	1973	1974	1975	1976	1977	1978	1979	
Berkshire	1.33	1.05	1.11	1.15	1.09	1.13	1.11	1.14	1.14
Chester White	1.25	1.00	1.02	1.07	1.07	1.05	1.07	1.17	1.09
Duroc	1.20	1.05	1.04	1.00	0.99	1.07	0.98	1.10	1.06
Hampshire	1.03	0.91	0.96	1.01	0.98	0.99	1.13	1.01	1.00
Poland	1.15	1.08	1.05	1.11	1.11	1.05	1.22	1.07	1.10
Spot			1.09	1.14	1.15	1.13	1.18	1.18	1.15
Yorkshire	1.29	1.00	1.07	1.08	1.03	1.04	1.09	1.13	1.09
Crossbred	1.17	0.94	0.99	1.03	1.06	1.02	1.04	1.15	1.05
Overall avg. ^a	1.20	1.00	1.03	1.06	1.05	1.05	1.09	1.11	

^aSpot breed not included since Spots were not represented each year.

Table 5. Average % ham of pigs of each breed for each year

Breed	Year of show								Overall avg.
	1972	1973	1974	1975	1976	1977	1978	1979	
Berkshire	15.76	16.30	16.93	15.83	16.00	16.08	16.90	16.37	16.27
Chester White	17.54	18.20	18.54	17.80	17.38	17.39	17.79	17.20	17.71
Duroc	17.78	18.13	18.68	17.43	16.90	17.46	18.18	16.79	17.67
Hampshire	17.48	18.33	18.25	17.79	17.22	18.02	18.23	16.83	17.77
Poland	17.08	17.71	18.38	17.09	16.47	17.71	17.77	16.24	17.31
Spot			18.21	17.01	16.45	17.26	17.22	16.14	17.05
Yorkshire	16.84	17.83	18.34	17.12	16.80	17.45	17.29	16.10	17.22
Crossbred	17.46	18.60	18.50	17.71	17.42	17.66	17.62	16.63	17.70
Overall avg. ^a	17.13	17.87	18.23	17.23	16.89	17.40	17.69	16.60	

^aSpot breed not included since Spots were not represented each year.

Table 6. Average ham loin index of pigs of each breed for each year^a

Breed	Year of show								Overall avg.
	1972	1973	1974	1975	1976	1977	1978	1979	
Berkshire	115.15	116.31	128.06	118.11	113.87	111.40	129.12	113.52	118.20
Chester White	135.29	137.19	143.30	137.44	130.72	130.91	139.07	120.39	134.29
Duroc	138.99	135.85	142.78	132.21	127.89	127.72	141.88	120.55	133.48
Hampshire	140.72	141.43	145.17	139.95	132.48	135.13	146.16	121.45	137.81
Poland	131.01	132.71	135.18	133.88	123.88	131.87	134.85	111.78	129.40
Spot			136.89	128.62	118.67	124.27	129.07	105.44	123.82
Yorkshire	128.18	136.08	138.21	131.11	122.95	129.74	127.90	101.37	126.94
Crossbred	138.54	145.39	148.58	143.27	132.20	135.84	138.42	115.38	137.20
Overall avg. ^b	132.55	134.99	140.18	133.71	126.28	128.94	136.77	114.92	

^aFormula for ham-loin index is: (% Ham - 10) X 10 + Adjusted Loin Eye Area X 10.

^bSpot breed not included since Spots were not represented each year.

Table 7. Average change in trait per year for pigs of each breed

Breed	Trait				
	Carcass length, in.	Backfat thickness, in.	Loin Eye area sq. in.	%Ham	Ham-loin index
Berkshire	.272**	-.012	-.060	.059	-.018
Chester	.211**	-.001	-.084	-.096	-1.652
Duroc	.362**	-.012	-.039	-.129	-1.767
Hampshire	.277**	.012	-.107	-.076	-1.773
Poland	.259**	.002	-.073	-.099	-1.712
Spot	.284*	.016*	-.183	-.254	-4.294
Yorkshire	.317**	-.010	-.187*	-.129	-3.121
Crossbred	.292**	.006	-.139	-.161	-2.932
Overall avg.	.284**	-.002	-.098	-.090	-1.854

* Average change per test is significantly different from zero, $P < .05$.

** Average change per test is significantly different from zero, $P < .01$.

The data from the barrows slaughtered in this show reveals a trend of longer pigs with less loin eye area, decreased ham percent, a decreased ham loin index and little change in backfat thickness except for the Spot breed. Although the barrows slaughtered in this show cannot be considered a representative sample of the industry, they do reveal a trend that many people feel alarming in that the carcass traits of loin eye area and percent ham seem to be declining in all breeds.

Trends in Oklahoma Swine Carcass Contests

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Story in Brief

Data from 677 market hogs—183 Durocs, 275 Hampshires and 219 Crossbreds—entered by producers in the State Fair of Oklahoma "Golden Pork Chop Contest" (a swine carcass contest) from 1968 to 1979 were analyzed to determine the average change in carcass traits over time. Average increase in carcass length per year for all breeds was .184 in. ($P < .01$). Average decrease in backfat thickness for all breeds was .011 in. per year ($P < .01$). No significant change over time was noted for loin eye area or percent ham.

Data from 281 market hogs—44 Durocs, 72 Hampshires and 165 Crossbreds—entered by producers in the Oklahoma National Barrow Show Performance Contest from 1975 to 1978 were also analyzed to determine the average change in carcass traits over time. Average increase in carcass length per year for all breeds was .383 in. ($P < .01$). Average decrease in loin eye area per year for all breeds was .423 sq. in. ($P < .05$). No significant changes were noted in backfat thickness, percent ham or average daily gain; however, the trend for all breeds was a decrease in backfat thickness and an increase in percent ham and average daily gain.