ANALYSIS OF CARCASS TRENDS IN AN OKLAHOMA YOUTH BARROW SHOW

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Story in Brief

Carcass data from 1294 barrows - 144 Berkshire, 151 Chester White, 207 Duroc, 194 Hampshire, 132 Poland China, 114 Spot, 152 Yorkshire and 200 Crossbreds - slaughtered in the Oklahoma City 4-H and FFA Livestock Shows from 1972 to 1984 is presented. The barrows were the top end of each respective breed selected by a judge in the live show.

In general barrows had significantly higher backfat thickness, smaller loin eye area, shorter carcass length and decreased estimated percent carcass lean from 1982 to 1984 as compared to all previous years. The Hampshire breed tended to be superior in all carcass traits measured except carcass length.

(Key Words: Swine Shows, % Lean, Length, Backfat, Loin Eye Area)

Introduction

Many individuals involved in the swine industry, including swine producers, educators, meat processors and others, have expressed concern over the changes in type of animals selected by live show judges in barrow shows in recent years. These barrows appear to be fatter, shorter, lower to the ground, larger and more wasty in the head and jowl and less desirable in carcass merit. Thus, data from barrows slaughtered in the Oklahoma City 4-H and FFA Livestock Show from 1972 to 1984 were analyzed to determine if changes had occurred in various carcass measurements.

Materials and Methods

The Oklahoma City 4-H and FFA Livestock Show has from 1400 to 2700 barrows exhibited each year. From 1972 to 1984, the top two 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 Meats, Oklahoma City. Adjusted slaughter weight, carcass length, backfat thickness and loin eye area were obtained from 1968 to 1984. The percent lean pork of carcass and 10th rib fat depth is also reported for 1980 to 1984.

The adjusted slaughter weight was based on 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 less, 144-168, 169-176 and 177 lb and up,

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respectively. The average adjusted slaughter weights were 221.5, 223.4, 225.2, 235.2, 252.4, 253.4, 241.8, 243.0, 251.3, 239.7, 251.3, 245.5 and 247.6 lb for years 1972 to 1984, respectively. Increases in maximum weight allowed in the show of 10 lb in 1975 and an additional 10 lb in 1976 through 1984 account for the marked increases in adjusted slaughter weights for these years. 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 1294 barrows that were slaughtered form 1972 to 1984 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.

Average adjusted backfat thickness for barrows of each breed and each year is presented in table 2. Barrows were fatter in the last three years, 1982 through 1984, than in all previous years ($P<.05$). The yearly average adjusted backfat thickness ranged from 1.297 to 1.411 inches from 1982 to 1984 as compared to 0.988 to 1.199 inches in the earlier years. The increase in backfat thickness in recent years probably reflects the emphasis by some live show judges and breeders to promote the thicker, deeper bodied pigs that are actually fatter. In breed comparisons, the Hampshires with an average backfat thickness of 1.093 inches were leaner ($P<.05$) than all the other breeds.

The average adjusted loin eye area for barrows of each breed and each year is show in table 3. Average adjusted loin eye area tended to decrease in a linear manner ($P<.05$) over time. The loin eye areas of 4.20 and 4.12 sq. in. for 1983 and 1984 were smaller ($P<.05$) than all previous years. The largest average loin eye area was 6.13 sq. in. for 1972 which was the earliest year measured and this value was higher ($P<.05$) than all subsequent years except 1975 which was 6.03 sq. in. The Hampshire breed had the largest ($P<.05$) average adjusted loin eye area of 5.54 sq. in. among all breeds. The Spot and Duroc breeds had the smallest loin eye areas of 4.97 and 4.98 sq. inches, respectively, which were smaller ($P<.05$) than all the other breeds except the Yorkshire breed's loin eye area of 5.13 sq. in.

The average adjusted carcass length for barrows of each breed and each year is shown in table 4. Carcass length tended to increase from 1972 to 1981 with the 33.8 in. reported in 1981, being longer ($P<.05$) than all other years. Carcass length tended to decrease from 1981 to 1984 with the 30.7 inches for barrows in 1984 being shorter ($P<.05$) than all previous years. The increase in carcass length from 1972 to 1981 reflected the emphasis by purebred breeders, live show judges and others to produce a longer hog. The decrease shown in carcass length from 1981 to 1984 probably illustrates the tendency of some live show judges and breeders to emphasize a shorter, deeper set and thicker hog. The Yorkshire breed had the longest carcass length of 32.7 in. and was longer ($P<.05$) than all other breeds. The Poland breed was shorter (31.8 in.) than all the other breeds ($P<.05$).

The average percent lean of the carcass as shown in Table 5 was estimated from 1980 to 1984 using the procedures recommended by the National Pork Producers Council. The barrows tended to decrease in percent carcass lean over time with the barrows in the most recent year, 1984, having the lowest percentage of 50.72. This value was less ($P<.05$) than all previous years. The Hampshire breed had the highest

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

Breed	Year of Show													Total
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	
Berkshire	12	9	14	14	12	12	12	12	9	8	8	12	10	144
Chester	15	13	15	15	12	12	12	10	10	9	8	12	8	151
Duroc	15	13	14	15	12	12	20	16	15	14	16	24	21	207
Hampshire	15	15	15	15	12	11	16	13	11	12	11	26	22	194
Poland	14	12	5	14	11	12	11	11	9	9	9	9	6	132
Spot	-	-	9	15	12	12	12	10	9	9	9	9	8	114
Yorkshire	13	13	15	15	11	12	13	9	9	9	9	12	12	152
Crossbred	14	15	15	15	12	12	15	14	12	12	11	30	23	200
Total	98	90	102	118	94	95	111	95	84	82	81	134	110	1294

Table 2. Average adjusted backfat thickness of barrows of each breed per year (in.)

Breed	Year of Show													Overall Avg.[1]
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	
Berkshire	1.33	1.05	1.11	1.15	1.09	1.13	1.11	1.14	1.07	0.92	1.34	1.38	1.26	1.163^{ab}
Chester	1.25	1.00	1.02	1.07	1.07	1.05	1.07	1.17	1.09	1.02	1.27	1.38	1.34	1.130^{b}
Duroc	1.20	1 05	1.04	1.00	.99	1.07	0.98	1.10	1.08	1.01	1.29	1.53	1.37	1.158^{b}
Hampshire	1.03	0.91	0.96	1.01	.98	0.99	1.13	1.01	0.96	0.95	1.22	1.37	1.30	1.093^{c}
Poland	1.15	1.08	1.05	1.11	1.11	1.05	1.22	1.07	1.15	0.97	1.24	1.33	1.44	1.142^{b}
Spot			1.09	1.14	1.15	1.13	1.18	1.18	1.17	1.05	1.34	1.45	1.39	1.198^{a}
Yorkshire	1.29	1 00	1.07	1.08	1.03	1.04	1.09	1.13	1.08	1.02	1.34	1.50	1.37	1.155^{b}
Crossbred	1.17	0.94	0.99	1.03	1.06	1.02	1.04	1.15	1.01	0.96	1.35	1.35	1.31	1.134^{b}
Overall Avg.[1]	1.199^{c}	.995^{gh}	1.038^{fg}	1.073^{def}	1.061^{ef}	1.062^{ef}	1.094^{de}	1.116^{d}	1.072^{def}	.988^{h}	1.297^{b}	1.411^{a}	1.337^{b}	

[1] Any two means without a common superscript differ significantly ($P < .05$).

Table 3. Average adjusted loin eye area of barrows of each breed per year (sq. in.)

Breed	Year of Show													Overall Avg.[1]
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	
Berkshire	5.76	5.33	5.87	5.98	5.47	5.06	6.01	4.98	4.44	4.78	4.21	4.13	3.90	5.15^{c}
Chester	5.98	5.51	5.79	5.82	5.69	5.51	5.90	4.83	4.40	5.10	4.54	4.14	3.90	5.27^{bc}
Duroc	6.08	5.42	5.60	5.46	5.84	5.32	6.01	5.26	4.81	4.82	3.97	3.72	3.74	4.98^{d}
Hampshire	6.59	5.81	6.27	6.20	6.02	5.41	6.38	5.29	4.86	5.56	5.13	4.62	4.65	5.54^{a}
Poland	6.02	5.56	5.13	6.30	5.92	5.48	5.71	4.94	4.61	5.40	4.39	4.22	4.03	5.34^{b}
Spot			5.50	5.86	5.42	5.17	5.64	4.40	4.38	4.86	4.45	3.74	4.18	4.97^{d}
Yorkshire	5.98	5.78	5.48	5.98	5.49	5.43	5.50	4.03	4.14	4.58	4.13	4.47	4.31	5.13^{cd}
Crossbred	6.40	5.94	6.35	6.62	5.80	5.74	6.22	4.91	4.83	5.09	4.56	4.28	4.04	5.32^{b}
Overall Avg.[1]	6.13^{a}	5.64^{c}	5.83^{c}	6.03^{ab}	5.71^{c}	5.39^{d}	5.95^{ab}	4.89^{e}	4.59^{f}	5.04^{e}	4.40^{f}	4.20^{g}	4.12^{g}	

[1] Any two means without a common superscript differ significantly (P<.05).

Table 4. Average adjusted carcass length of barrow of each breed per year (in.)

Breed	Year of Show													Overall Avg.[1]
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983	1984	
Berkshire	31.4	31.3	31.7	31.3	32.6	32.4	32.7	33.2	33.1	33.9	32.8	31.9	30.9	32.2^{c}
Chester	31.4	31.6	32.0	31.3	32.0	32.0	32.5	33.1	32.9	33.7	32.5	31.5	31.4	32.1^{c}
Duroc	30.9	31.3	31.7	31.3	32.4	32.5	33.3	33.4	32.8	33.7	32.7	31.4	30.5	32.1^{c}
Hampshire	31.2	31.5	32.2	31.6	32.1	32.5	33.0	33.3	32.8	33.4	32.4	31.6	30.5	32.0^{c}
Poland	30.7	30.9	31.8	30.8	31.5	32.2	32.2	32.6	32.3	33.4	33.2	31.7	31.1	31.8^{d}
Spot			32.0	31.5	32.3	32.6	32.9	33.2	33.2	34.1	33.4	32.2	30.5	32.5^{b}
Yorkshire	31.8	32.4	32.4	32.1	32.9	32.9	33.8	34.3	33.8	34.7	33.4	31.6	30.7	32.7^{a}
Crossbred	31.1	31.6	31.8	31.4	32.1	32.4	33.2	33.1	33.3	33.8	32.4	31.4	30.7	32.0^{c}
Overall Avg.[1]	31.2^{g}	31.5^{f}	32.0^{e}	31.4^{fg}	32.2^{d}	32.4^{d}	33.0^{bc}	33.2^{b}	33.0^{bc}	33.8^{a}	32.8^{c}	31.6^{f}	30.7^{h}	

[1] Any two means without a common superscript differ significantly (P<.05).

Table 5. Average percent lean of carcasses of barrows of each breed per year (in.)

Breed	Year of Show 1980	1981	1982	1983	1984	Overall Avg.[1]
Berkshire	54.46	55.19	52.21	51.75	50.38	52.64^{cd}
Chester	54.46	56.16	52.94	51.13	48.99	52.75^{bcd}
Duroc	56.31	55.44	51.85	50.46	49.16	52.16^{d}
Hampshire	56.37	58.16	56.24	54.74	52.40	55.04^{a}
Poland	53.74	57.43	53.16	51.97	50.02	53.50^{bc}
Spot	53.74	55.48	52.81	49.07	49.46	52.18^{d}
Yorkshire	53.33	54.60	52.39	52.66	51.73	52.85^{bcd}
Crossbred	56.35	56.12	53.61	53.45	51.39	53.69^{b}
Overall avg.[1]	55.04^{b}	56.12^{a}	53.14^{c}	52.34^{d}	50.72^{e}	

[1] Any two means without a common superscript differ significantly ($P<.05$).

Table 6. Average 10th rib fat depth of barrows of each breed per year (in.)[1]

Breed	Year of Show 1980	1981	1982	1983	1984	Overall Avg.[2]
Berkshire	.86	.88	1.11	1.14	1.26	1.06^{b}
Chester	.84	.88	1.18	1.28	1.48	1.12^{a,b}
Duroc	.71	.87	1.06	1.25	1.40	1.10^{a,b}
Hampshire	.73	.78	.88	.89	1.25	.95^{c}
Poland	1.04	.82	1.03	1.17	1.37	1.07^{b}
Spot	.94	.89	1.13	1.43	1.54	1.18^{a}
Yorkshire	.86	.88	1.04	1.12	1.22	1.04^{b}
Crossbred	.72	.88	1.04	1.00	1.30	1.03^{b,c}
Overall avg.[2]	.82^{c}	.86^{c}	1.05^{b}	1.11^{b}	1.33^{a}	

[1] Average slaughter weights were 251.3, 239.7, 251.3, 245.5 and 247.6 lb. for 1980 through 1984 respectively.

[2] Any two means without a common superscript differ significantly ($P<.05$).

percent carcass lean of 55.04 which was greater ($P<.05$) than all other breeds.

The average 10th rib fat depth which is used in estimating the percent lean pork of the carcass is shown in Table 6. Barrows tended to increase in 10th rib fat depth measurements each year from 1980 to 1984 with the 1.33 inches reported for 1984 being higher ($P<.05$) than all previous years. Among breeds, the Hampshire breed had the least 10th rib fat depth of .95 in. which was less ($P<.05$) than the other breeds except the Crossbreds.

The data from the barrows slaughtered in this show reveals a trend in the last three years of fatter, shorter pigs with less loin eye area and estimated percent carcass lean. Although the barrows slaughtered in this show cannot be considered a representative sample of the industry, they do reveal a declining trend in carcass merit in all breeds which many people feel is alarming.