

# Present Situation in Meat Animal Composition

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## Introduction

It seemed that there were about three approaches to this subject. First, we might look at *methods* that have been used to evaluate meat animal composition. However, I think Dr. Cross has already done a good job of covering that from a research perspective.

I might just add that in a graduate seminar at SDSU in 1966, I presented a 25 yr. historical review of methods that had been used to measure composition and were published in the *Journal of Animal Science* up to that time. About 30 different methods had been evaluated over those 25 years. The review amounted to 18 pages of text and included 143 references, so I know that there has been considerable work done in that area. Not many new methods have been tested since then, so I am not going to spend much time today on methods of measuring composition.

The second approach to this subject would be to reflect, through population survey data or other indicators, the actual state of market composition of the meat animal species.

The third approach which interests me greatly would be to report on the present state of programs designed to bring about change in meat animal composition. I would like to spend most of my time in this area.

## Sources of Information

Getting back to our status in U.S. meat animal composition today, I'd like to mention five sources that I have used. These sources cover only the last 10 to 30 years. To my knowledge, there isn't a great deal of information prior to that.

The first source, the U.S.D.A. Meat Grading Service, has kept records on the number of cattle that have been graded by grade and the total numbers marketed over the years. Table 1 shows the pounds graded compared to total commercial production and the proportions of graded beef that fall into the various quality and yield grades. All grading had been on a voluntary basis until 1976 when beef carcasses graded for quality had to be yield graded or vice versa.

The second source, a February 1982 report by Parham and Agnew from the U.S.D.A. Economic Research Service, clearly

documents the marked grade improvements occurring in the market hog population over the past 12 years. They also compared these results to a previous study in the early '60's. Table 2 summarizes the 1967-68 and 1980 comparisons.

A third source would be to use other U.S.D.A. statistics from the Food Safety and Inspection Service on the numbers of hogs slaughtered and the amount of lard that is rendered to reflect the amount of trimmable fat produced per carcass. Then we'd have to assume that the rest of the fat left on wholesale cuts was standardized over time which it's not, I'm sure. However, this would give some idea of trends that have occurred. This could be done for tallow production, likewise. The Food Safety and Inspection Service has published lard production figures over the years. For beef tallow production, you would have to dig a little harder to find those figures and make several assumptions in their use.

A fourth source is carcass show results, but here we need to realize the limitations of selecting a sub-segment of the industry. Livestock show animals probably do not totally reflect what is happening in all packing plants across the nation, but they should be the cutting edge of trends leading us into the future if we will take that with a grain of salt.

A fifth source which I am not going to dwell much on today would be the breed characterization work that has been done through the U.S. Meat Animal Research Center over the last decade. That data is valuable. But it is not useful for reflecting the proportion of those breeds in our livestock populations, nor the average composition of those actually going to market each year.

## Discussion

Now, to return to the first source regarding the U.S. Beef Grade situation. Interpreting the U.S. Meat Grading Service statistics in Table 1 left me with the conclusion there really have not been any great compositional changes over recent times. The only trend really apparent is when new regulations are enacted, there's an immediate change, which is more likely a result of the changed definitions than actual population changes.

As an example, the proportion of cattle that graded Yield Grade 4 increased markedly in 1976. That resulted from the mandatory yield grading of all cattle also quality graded. Obviously many more had to be officially Yield Graded 4 in 1976 than prior to 1976 because of the grading regulation requirements if packers also wished to sell them as U.S. Choice. The proportion of Y.G.4's went from about 3% prior to 1976 to 8-10% in the last 5 or 6 years.

My conclusions from Grading Service grade "consists" are

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*Reciprocal Meat Conference Proceedings, Volume 35, 1982.*

Table 1. Carcass Beef Graded by USDA

Year	Quality Graded <sup>a</sup>				Total pounds Graded (Million #)	Yield Graded <sup>b</sup>					Total Commercial Production (Million #)	Percent Graded
	Pr	Ch	Gd	Std		1	2	3	4	5		
1955	—	—	—	—	6,050						13,213	45.8
1956 <sup>c</sup>	5.7	57.1	26.4	2.2	6,990						14,090	49.6
1957	5.3	59.0	27.1	3.8	6,943						13,852	50.1
1958	3.6	62.0	28.7	2.9	6,445						12,983	49.6
1959	2.8	66.1	26.4	2.5	6,728						13,233	50.8
1960	2.8	66.0	25.1	2.8	7,058						14,374	49.1
1961	3.5	69.2	21.4	2.7	7,439						14,930	49.8
1962	3.3	69.4	21.9	2.6	7,399						14,931	49.6
1963	3.7	72.7	19.4	2.0	8,312						16,049	51.8
1964	4.4	71.8	17.5	2.0	10,053						18,037	55.7
1965 <sup>c</sup>	5.9	73.6	15.5	1.8	10,295						17,733	58.1
1966	6.4	76.1	14.5	1.0	12,037						19,493	61.8
1967	7.2	76.8	13.8	0.7	12,728						19,991	63.7
1968	6.8	77.8	13.1	0.6	13,082	0.8	33.8	64.0	1.3	0.1	20,662	63.3
1969	6.8	77.6	12.9	0.6	13,385	1.0	37.2	60.8	0.9	0.1	20,960	63.9
1970	6.8	79.6	11.8	0.4	13,927	1.0	32.8	65.4	0.7	0.1	21,472	64.9
1971	6.1	80.1	12.2	0.4	13,955	—	—	—	—	—	21,697	64.3
1972	5.9	80.7	12.4	0.2	13,570	—	—	—	—	—	22,218	61.1
1973	6.1	80.5	12.3	0.2	12,142	0.8	27.5	67.9	3.4	0.4	21,088	57.6
1974	6.2	79.4	11.6	0.3	12,403	0.8	25.1	67.3	5.9	0.9	22,844	54.3
1975	5.1	77.3	12.9	0.7	10,265	1.7	31.2	63.6	3.2	0.3	23,664	43.4
1976 <sup>c</sup>	9.8	79.5	6.4	0.4	13,909	1.9	28.4	57.5	10.3	1.7	25,725	54.1
1977	8.5	83.4	5.2	0.3	13,934	2.4	30.9	57.2	8.3	1.1	25,034	55.9
1978	6.1	87.5	4.7	0.2	13,552	2.2	30.4	58.3	8.2	0.9	23,724	59.5
1979	6.1	88.9	4.1	0.2	11,997	1.8	28.9	58.8	9.3	1.2	20,845	57.6
1980	5.9	89.0	4.3	0.2	12,137	1.6	28.9	58.4	9.7	1.4	21,635	56.1
1981	5.1	90.4	3.6	0.1	12,118	1.9	30.3	57.2	9.4	1.2	22,194	54.6

<sup>a</sup> Percent of total beef quality graded by USDA. Sum does not total 100 because mature grades are not included.

<sup>b</sup> Percent of total beef yield graded by USDA. Annual total wt. in millions of pounds until 1977 when all Quality graded beef was also Yield graded: 1967-1,139; 1968-2,293; 1969-2,544; 1970-3,530; 1971 and 1972 — Data not complete; 1973-7,230; 1974-8,667; 1975-8,878; 1976-11,947.

<sup>c</sup> Grade revisions implemented.

Table 2. Pork Carcass Grade Comparisons in the U.S. Market Hog Population<sup>a</sup>

U.S. Grade	1967-1968 <sup>b</sup>	1980
	Percent	
1	8.2	71.7
2	42.1	24.2
3	35.7	3.7
4	12.2	0.3
Utility	1.8	0.1

<sup>a</sup> Source: adapted from USDA-ERS #675; Feb. 1982 "Improvements in Grades of Hogs Marketed."

<sup>b</sup> Source: USDA Mktg Research Rpt. #849, May 1969 "Improvements in Grades of Hogs Slaughtered From 1960-1961 to 1967-68."

that any apparent trends are mostly affected by temporary economic conditions and that there is *no* evident long term change in the yield grade make-up of those cattle that are officially graded. The major deficiency with this source is that only information on those graded is available. No information on those not graded (around 43% of the population) and their grade proportions is available.

Even though there is very little, if any, pork officially government graded, the Parham and Agnew study is of sufficient scope to be a valuable contribution to our knowledge. This report compared the improvements in the grades of hogs marketed over the three time periods 1960-61, 1967-68 and most recently, 1980.

Summarizing their findings from 1980, they sampled 36,000 carcasses in 62 plants and described this sampling as one out of every 2,500 hogs slaughtered in the U.S. In 1980,

96% of those marketed were graded as No. 1 or No. 2. Seventy-two percent of the hogs going to market were No. 1's. Comparing that back to the 1967-68 study, 57,000 carcasses were sampled at 60 plants. This was calculated to be one out of every 1,250 slaughter hogs. At that time 50% graded U.S. No. 1 or No. 2, with only 8% No. 1 grade (Table 2). The grading system has remained unchanged over these two time periods so no adjustments to the data were necessary.

Two other observations made were that for the U.S. No. 1 grade the average length of pigs has increased about 0.5 inch from 30.4 inches to 31.0 inches and that backfat has decreased a little over .25 inch from 1.51 down to 1.22 inches. Apparently, considerable progress in changing hog composition has been made by the swine industry in the 12 years, 1968 to 1980.

Comparing fat produced per animal or per cwt carcass weight is an interesting area. Shown in Table 3, lard production as late as 1960 was over 18% of carcass wt. The most recent statistic for 1981 shows a reduction to 7.5% of carcass wt. In other words, we have reduced lard per hog to about 40% of its level just 20 years ago on essentially the same average weight live hog.

**Table 3. Average Dressed Weights of Livestock Slaughtered, United States 1970 to 1981\***

Year	Cattle	Hogs <sup>c</sup>	Lard lbs/hog	Percent of Dressed wt.	Sheep & Lambs
1960	—	—	30.9	18.2 est.	—
1970 <sup>b</sup>	612	170	22.8	13.4	51
1971	609	168	21.2	12.6	51
1972	620	169	18.6	11.0	52
1973	625	171	16.4	9.6	52
1974	620	174	16.8	9.7	51
1975	580	170	14.8	8.7	51
1976	602	170	14.4	8.5	54
1977	599	170	13.5	7.9	54
1978	610	171	13.0	7.6	56
1979	634	172	13.0	7.6	57
1980	634	172	12.8	7.4	55
1981	638	173	12.9	7.5	54

\* Source: adapted from USDA-ERS Statistical Bulletin 522, Tables 114 & 117, Oct. 1982.

<sup>b</sup> Data for 1970-72 — 48 states.

<sup>c</sup> Dressed packer-style

Certainly, this statistic could be affected by packing plant trimming methods. With cuts being prepared today by basically just removing the skin and perhaps putting a slight bevel around the edges, it would seem some cutting standards have been relaxed. However, even if there might be a slight bias to the data, you can still conclude that a significant reduction in fat produced per pound of pork carcass has been accomplished.

Beef tallow, both edible and inedible, per cwt. carcass statistics are more difficult to get. Sources most likely to have information would be USDA-FSIS or ERS and the National Rendering Assn.

Another source to consider for evidence of changed compositional trends would be carcass show results. I have been involved in that area to a considerable extent over the last 13 years and somewhat before that, too. Before starting, it should be realized that these data may not be totally representative of the population as a whole. Certainly, bias due to management practices employed to show the animal at its "best" can influence the carcass composition and quality, but nevertheless, the data should give us some idea of industry trends.

The most common observation I have made from several different carcass show sources is that beef cattle are entering shows at heavier weights than they did as short a time as 7 or 8 years ago. The average live weights have increased around 60 pounds in one of our youth shows (Table 4). In an open show where cattle are brought in straight out of the feedlot after selection by feedlot managers, we've increased about 100 lbs. in average live weight over this 7 or 8 year period. USDA statistical data also show an average live wt. increase of 30-35 lbs. from the early 1970's. So, I think that trend is fairly evident, although weights did decline temporarily due to poor economic conditions in the mid-70's.

In pork, in our state-wide youth show, we've been increasing the live weights from 7 to 10 lbs. over the last 8 years (Table 4). Lambs are also coming in about 10 lbs. heavier. So, when you realize that the market animals we are looking at today are heavier, we need to keep in mind when we look at a raw data fat thicknesses, ribeye areas, and even yield grades that unless we correct for weight we may be misled somewhat. The increased carcass weight trends in carcass show beef and lamb weights are partially supported by USDA Average Dressed weight data in Table 3. The pork carcass show trend is only evident to a limited extent in the USDA data. This brings us back into Russ's area. How do we correct composition or anatomical measurements for weight variation? What data are we actually basing that correction on? Unless we correct for weight differences, our conclusions may be slightly biased.

Other areas noted from pork carcass show results include the increased length. We have seen about a 2 inch length increase in the last 7 years. John Phillips, who supervises the National Barrow Show (NBS) at Austin, Minnesota, has noted around an inch increase in barrows entered there. However, average back-fat at the NBS has shown very little change. Likewise, our Kansas carcass shows have shown little change in recent years after we remove the weight factor.

So the question arises, if industry-wide fat production figures continue to decline, why has fat plateaued in carcass show entries. Do judges like a little fat on the barrows to assure "freshness?" Has the purebred and seedstock industry slowed their pursuit of lean meat-type hogs? How do we evaluate? Much discussion is underway in the pork industry on this subject. More will likely continue.

In the beef area, I wish to cite an indication of what might be more of an educational process than actual industry changes in a show that we have in our feedlot area in Southwest Kansas. We think this Beef Empire Show is one of the best, if not the best, beef carcass and live show in the world. The 200 head entered represent the best from feedlots with around 600,000 head capacity. In the early years of that show, 1969-70, 46% of the first year's entries were graded U.S. Prime, the second year 20% were Prime. From those first shows, feeders

**Table 4. Kansas Junior Livestock Show Carcass Data Trends  
for Beef, Pork and Lamb, 1973-81<sup>a</sup>**

	1973	1974	1975	1976	1977	1978	1979	1980	1981
<b>STEERS (averages)</b>									
No. of head	50	50	60	65	70	85	80	85	88
Live wt.	—	—	—	1177	1157	1178	1189	1198	1194
Warm carcass wt.	719	711	711	742	729	745	747	765	761
% Grading, U.S.									
Choice or Prime	38	46	30	62	56	22	53	45	34
Fat thickness	.39	.39	.33	.38	.43	.33	.42	.34	.30
REA	13.9	13.6	13.8	13.8	14.1	14.3	13.7	14.0	14.7
Yield grade	2.3	2.25	2.15	2.3	2.4	2.1	2.5	2.2	2.1
<b>BARROWS (averages)</b>									
No. of head	16	25	35	35	40	40	45	71	60
Live wt.	227	227	234	233	231	235	239	237	234
Warm carcass wt.	—	—	—	—	—	—	—	—	180
Length	31.4	31.6	32	32.1	32.35	32.4	33.0	33.2	33.6
Ave. backfat	1.13	1.04	1.19	1.18	1.16	1.20	1.19	1.17	1.2
LEA	5.05	5.57	4.68	5.34	5.27	4.98	4.91	4.75	5.2
<b>LAMBS (averages)</b>									
No. of head	22	40	40	40	45	40	45	70	80
Live wt.	105.5	105.6	105.9	108.5	108	112.4	117	112	114
Warm carcass wt.	—	—	—	—	—	—	—	—	—
Fat thickness	.16	.18	.15	.17	.16	.19	.15	.14	.16
REA	2.38	2.46	2.26	2.29	2.36	2.44	2.58	2.54	2.40
Yield grade	2.9	2.8	2.4	2.8	2.6	2.95	2.5	2.4	2.4

<sup>a</sup> A selected group of top live placing animals constitute these carcass show entries.

<sup>b</sup> Primarily wethers.

learned to redefine desirability away from those that were too fat. That first year, 1969, 25% of the entries were also Yield Grade 4's and 5's. The second year 17% of them were Yield Grade 4's and 5's. More recently (Table 5), those that have been selected and brought in are now running 85-90% Yield Grade 1's and 2's, 10-14% 3's and only 1 or 2% Yield Grade 4's and no 5's. Yet, we're still getting around 50% Choice Quality Grade. So what do these figures mean? Because of the high selectivity and cost to enter, it seems to me that some of the changes are a result of educational successes rather than actual changes in carcass composition. We have seen an increase in the average live and carcass weights, but that is the only noticeable trend. Ribeye area and fat thickness have remained quite constant when they are corrected for increased weight (Table 6). It is possible that feeding to a certain quality grade endpoint in beef has resulted in a rather constant composition, albeit on heavier cattle as the genetic base has been shifted by selective breeding.

An additional viewpoint on the use of carcass data for shows and swine improvement was solicited from Dr. Chuck Christian, University of Minnesota, who is the secretary for the National Swine Improvement Federation. In his opinion, meat type certification requirements as they are still applied in carcass shows are outdated. He recommends revising those to 30 inches length, up from the current 29.5 inches, 4.75 sq. inches loin eye area, up from the current 4.5 sq. inches and 1.3

inches of backfat, 0.2 in. less than the present 1.5 inches, all at a 230 lb. live weight.

Now I would like to get into the last part of where I think we are with the programs that have been designed by various people and industry groups over the years to either monitor or encourage carcass improvement. These programs could be classified into three categories:

- 1) Research, which Dr. Cross has discussed at length;
- 2) Meat animal improvement;
- 3) Value determinations in the market place.

My bottom line analysis of this whole area is that our programs are in a state of disarray. Meat type certification programs or certified meat sires in swine and similar programs for beef cattle have fallen into disuse. These were developed through cooperative efforts from university and government people, breed associations, purebred breeders, packers, and marketing agencies. They were quite instrumental in bringing about rapid progress in the swine industry.

The feeling now seems to prevail that we need a balance between production and carcass emphasis. In the past (probably due to the excessive fat problem) the emphasis became over-weighted in favor of carcass improvement programs and we got ourselves into trouble because we paid less attention to some of the other areas of swine production. In visiting with a swine breed association secretary on this subject, he said they're presently involved with other breed associations in

Table 5. Beef Empire Show, Carcass Grade Summary

Year	No. cattle Entered	Pr	Quality grades			Distribution by (percent)		Yield Grades			
			Ch	Gd	Std	1	2	3	4	5	
1969	70	46	51	3	—	6	27	42	21	4	
1970	134	20	60	20	—	8	34	40	16	1	
1971	157	2.5	82	16	—	16	44	35	3	1	
1972	232	4.3	58	38	—	24	50	23	1	1	
1973	220	3.0	61	35	—	30	46	20	4	—	
1974	199	2.0	60	38	—	32	40	25	3	—	
1975	192	1.0	33	65	1.0	45	41	12	2	—	
1976	269	6.1	58	27	9.0	36	43	15	5	—	
1977	203	1.5	52	43	3.0qc	43	41	2	—	—	
1978	171	3.0	55	34	8.0	47	37	14	2	—	
1979	186	1.1	53	35	11.0	36	45	16	3	—	
1980	147	1.4	57.5	36.5	4.0	42	45	11.5	0.7	—	
1981	198	1.5	51	42.5	5.0	44	38	7	1	—	
1982	195	.5	44.6	50.3	4.6	39.5	40.0	18.5	2.0	—	

Table 6. Beef Empire Show, Average Carcass Measurement Statistics by Sex Group

Year	No. of head		Warm Carc. wt.		Ribeye Area, sq. in.		Fat Thickness, in.		% US Choice or Prime		Yield Grade	
	(S)	(H)	(S)	(H)	(S)	(H)	(S)	(H)	(S)	(H)	(S)	(H)
1977	139	64	694	579	14.3	13.7	.37	.39	64	62	2.1	2.1
1978	108	63	739	627	14.1	13.6	.37	.33	49	62	2.2	1.9
1979	119	67	770	659	14.6	14.1	.43	.42	52	58	2.3	2.1
1980	99	48	736	660	14.4	14.6	.43	.45	57	63	2.2	1.9
1981	132	66	754	680	14.2	14.5	.37	.38	54	45	2.3	2.0
1982	129	66	765	681	14.1	14.9	.45	.39	49	38	2.5	1.7

(S) = Steers, (H) = Heifers

developing a production pedigree in which carcass merit could be included, but where more emphasis would be placed on production factors rather than on the certified meat sire type program of the past.

Another program that has been available for ten years has been the U.S.D.A. Beef Carcass Data Service, the orange ear tags, for beef cattle. This program along with the U.S. Beef Evaluation System was designed to assist beef breeders in getting carcass grade data. I think all of us looked on those programs as having great potential for the industry. However, as I read the situation in our state, these programs are on the decline. The major reason is a lot of frustration in buying the tags, having high hopes of getting the data back and then often not getting a major part back. Enough producers have lost all or a substantial portion to cause serious credibility problems. I conducted a survey on this subject a few years ago. On the average, we were getting about 60% of the tags and the information back. Even then, frequently it was as much as 2-3 months later, which is a problem for producers who are trying

to make breeding decisions for the next year's calf crop. Recently, we've been receiving them in 4-5 weeks. However, there is still a lot of frustration. Unfortunately, the programs seem to be falling into disuse.

Some beef breed associations had developed programs for carcass improvement along with other traits. A couple of breed secretaries indicated their breeds had programs of national sire evaluation over the years, but most of these have now given up on trying to get carcass data. There are just too many hassles involved in doing it. Also, the signals they are getting from producers or commercial producers who are interested in data on bulls is more on maternal traits, more on calving ease or birth weight and thirdly on growth traits, with hardly none on carcass traits. So, it seems our breed associations don't have the interest they once did in the carcass area. That point of view is supported by professional animal breeders who emphasize targeting growth and production traits rather than going too many directions, with carcasses also included.

Another program that we are continuing in our state along with a few other states is ultra-sonic scanning or, in some states, electronic evaluation programs. A major reason these electronic techniques are used is so you don't have to slaughter breeding animals. Secondly, is to avoid the increasing hassles in getting accurate carcass data. Although even interest in this program is diminishing, we are trying to use this as an alternative to some carcass shows.

One other point I would mention is that several years ago at least one breed association was sponsoring technicians on the road to scan hogs for a fee. To my knowledge, that has been discontinued. One reason, no doubt, was the cost. Also, some have questioned the accuracy of some of the operators that were providing this service.

In the area of carcass show programs, we're finding less and less availability of facilities in our large, high production packing plants. Although it can be done, it takes a lot of people working quickly under less than ideal circumstances. Also, we face continually escalating costs to get data this way, as Russ mentioned.

We are seeing more cooperation from what I will describe as small locker plants, but they're limited on the number of livestock that they can slaughter at one time and whether they want to take ownership of it. We are seeing an increased interest in trying to tie production information together with carcass through the futurities or derbies as some of you call them or weight of muscle produced per day of age. That likely is a direction we will continue to go if there is interest.

In looking at what is used from the Meat Grading Service, very little pork is U.S.D.A. graded. Certainly there are plant personnel that are doing grading using some variation of the standards developed by U.S.D.A., but I don't know of anybody buying the service of a U.S. Grader for pork grading. Lamb, as far as I can see, will continue to be quality graded where large lamb slaughters are located but since yield grading is still optional, I wouldn't expect its use to be markedly increased. In beef, we've seen from between 54-64% of all cattle slaughtered continuing to be graded. That has held quite constant for a long time except when economic conditions compelled producers to market unusually high numbers of lighter weight, lower grading cattle.

Looking at the AMSA recommended methods for carcass evaluation, I am very appreciative of the work done by the lamb committee recently. It's an excellent publication. Even though I am aware of the NPPC interest in, and funding for a Pork Value project, I think even more modern work should be done on pork and beef evaluation systems. Because of increasing costs and difficulties in collecting carcass data, there is still a real need to achieve efficient, accurate measurement of live animal composition.

### Conclusion

To summarize and at the risk of over-simplifying, it appears to me that recent developments in beef and lamb carcass evaluations are not so much a change in composition, but really the accompanying results of carrying market animals to heavier weights. Because the chosen endpoint is a probability to achieve the U.S. Choice quality grade, we will likely not change composition significantly until quality grades and mar-

ket demand are significantly changed. The development making possible constant composition at heavier weights is the changed genetic base with the infusion of Continental breeds or new, more growthy, later-maturing strains of British breed cattle. Their genetic potential allows them to grow to heavier weights before getting fat, so we just take them to heavier weights and keep them at about the same fatness. Periodically, producers respond to market perceptions by holding livestock past the normal marketing compositions, but these are always short term situations.

In hogs, there has been a slightly different situation in that decades ago we had more fatness and quality than anyone needed or wanted and the considerable further processing of the pork carcass substantially removed the need for quality grades. Therefore, the industry was able to pursue growthiness and larger frame size with little constraint. By marketing at constant weights, the industry made rapid progress in reducing fat because the larger framed hogs were essentially marketed earlier and earlier on their growth curve. The increased length per unit weight is a relatively good indicator of the larger frame size we've been selecting for all these years.

To close, I'd like to pose several questions with a few brief comments:

1. What progress have we made?

Comment — So much and so rapid in swine that antagonisms were raised not only between meat and other production traits, but also between industry thinkers and leaders. The antagonisms have resulted in at least a 5 to 6 year period of little carcass emphasis in breed improvement programs.

2. How have we achieved that progress?

Comment — Through a combination of education and market forces. Education was likely a much stronger force than the market for several years, but education would have been foolhardy if market forces had not generally supported similar goals.

3. How do we best maintain or improve on what we've achieved? Should carcass shows continue to play a role? Will producers use information for decision-making or are they only educational and social occasions?

4. How far do we go?

Comment — Meat animals are biological beings subject to many environmental forces and constraints that must be efficiently dealt with. In carcass merit evaluations, should we impose lids beyond which we do not reward? Will this protect against PSSE/PSS, double muscling, other genetic abnormalities?

5. Who decides what is most desirable for a many faceted marketplace?

6. How much more is anyone willing to pay for it?

7. A big hurdle to carcass data collection is assured identity transfer through the slaughter process. How much industry-wide incentive is there to maintain individual animal identity? How much will it cost and who pays?

8. Knowing that all meat animals have some value, even if only the salvage value of condemned ones, what is the most equitable system of premiums and discounts to bring about desired changes?

Comment — Need to remember this is a multi-faceted industry with many sub-segments looking for the traits (with accompanying price discounts) that carcass show judges

would turn thumbs down on.

9. What will we do with young, intact males (bulls, boars, rams) if they become a significant market group?

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