CONSUMER EVALUATION OF FRESH PORK QUALITY

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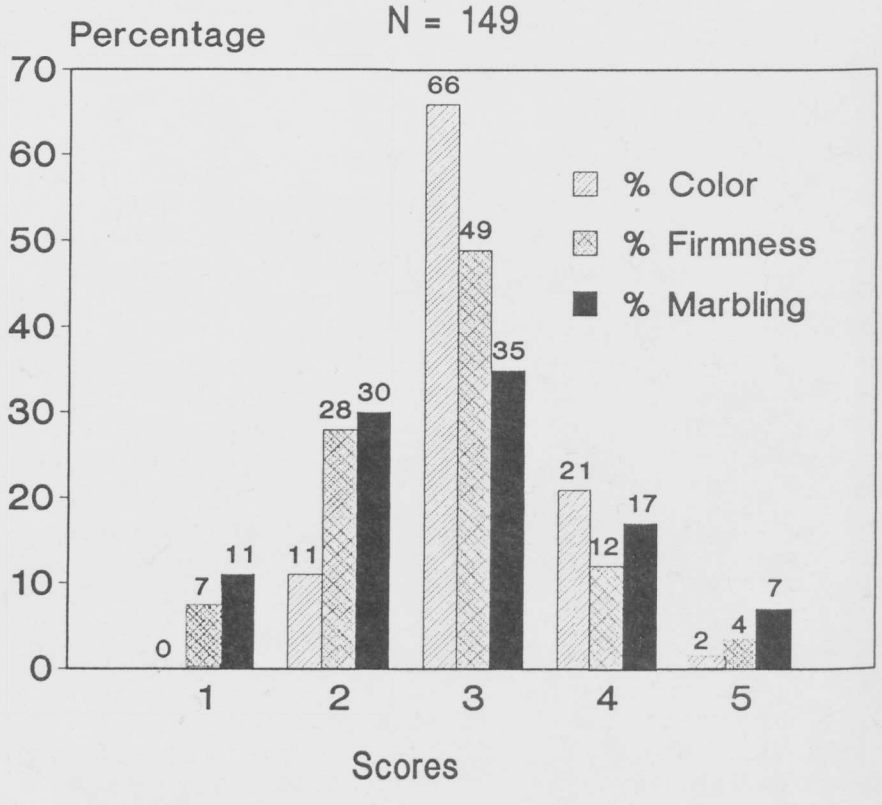
INTRODUCTION

Quality is a term widely misunderstood in the United States and perhaps throughout the world as it applies to MEAT. Many think it means quantity - i.e. lean vs. fat; others nutritional value; and still others wholesomeness. A dictionary definition is "That which makes something such as it is; a distinguishing characteristic." To meat scientists it means the palatability traits of meat, i.e. tenderness, juiciness, flavor and overall acceptability. Researchers have examined color, firmness and marbling of pork in relation to palatability. Much of this work was accomplished in the 70's and Dr. Joseph Sebranek was commissioned by the National Pork Producers Council to complete a thorough review of pork quality research (Sebranek, 1981). Now in the late 80's the subject has surfaced again, especially in the popular press (American Meat Institute, 1988; Grandin, 1988; 1989; Miller; 1989a, 1989b). This study was conducted to compliment the earlier work and differs in that we studied a pig population unselected for quality.

MATERIALS AND METHODS

Pork loins from 238 different hogs in a statewide pork carcass contest were graded in the packing plant on five point scales for color, firmness and marbling (University of Wisconsin, 1963). The loins were

Fig. 1: Quality Scores By Percentage



shipped to two different retail chain stores. Four retail packages of fresh pork chops from each loin contained a questionnaire to be filled out by the purchaser and returned for a $0.50 refund. From 952 questionnaires distributed, 149 usable records (15%) were obtained on 108 different loins (45% of the original 238).

Consumers indicated reasons for selecting pork and ranked the pork chops on five point scales for tenderness, juiciness, flavor and overall acceptability.

RESULTS

Figure 1 shows the distribution of quality scores throughout the 149 useable records. The means, standard deviations and coefficients of variation are shown in Table 1. The pig population for this study was unselected, other than the owners entered the pigs in a statewide pork carcass contest. Each pig was identified as to owner, breed, live and carcass weights, and live and carcass placings to be used in the statistical analysis. Each carcass was completely evaluated. Loins were shipped to retail stores and packages of pork chops coded and sold. No method was employed to "force" consumers to return the questionnaire, other than encouraging them with a $0.50 discount on their next purchase. Thus, the population for this study was representative of that presented to consumers and encountered by them in their day to day purchases and evaluations at home. Color score 1 did not show up in our sample and 3 was the preponderate color score. Firmness showed the most variability and marbling the least.

Under home conditions consumers ranked tenderness, flavor and overall acceptability of these pork chops consistently high (Table 1). There was more variability in juiciness evaluations. Nevertheless, regression analysis showed nonsignificant relationships of quality (color, marbling, firmness), quantity (loin eye area, average backfat, percent ham and loin, carcass weight) attributes, breed, and contest placing on perceived palatability. Becker, et al. (1989) evaluated the effects of fasting and transportation on market hogs and found that these preslaughter treatments did not affect juiciness or acceptability of cooked chops as evaluated by a trained panel. However, Topel, et al. (1976) in the first published consumer study on pork quality found that consumers and a trained panel scored pale chops significantly lower in acceptability than normal or dark chops. Their study involved 150 consumer participants. Three equal groups of pork loins were selected: (1) pale and watery, (2) normal colored and (3) dark colored.

TABLE 1 PARAMETERS (n = 149)

Item	$\bar{x}$[a]	S.D.	C.V.
Color	3.14	0.62	19.4
Firmness	2.77	0.90	32.5
Marbling	2.82	0.11	3.9
Tenderness	3.94	0.82	20.8
Juiciness	3.65	0.82	27.4
Flavor	4.15	0.81	20.0
Overall Acceptability	4.15	0.88	21.3

[a] Five-point scales
5=Dark, firm, abundant marbling, extremely tender, juicy, excellent flavor, like very much, respectively
1=Pale, soft, devoid, very tough, very dry, objectionable, undesirable, respectively

TABLE 2 REASONS FOR SELECTING PORK
PERCENT RESPONDING

Leanness 81%				Weight 32%			
Scores	C[a]	F[a]	M[a]	Scores	C	F	M
1	-	82	63	1	-	27	25
2	81	76	84	2	25	24	27
3	80	84	86	3	32	37	38
4	84	76	77	4	35	29	35
5	100	100	82	5	33	50	27

Price 69%				Firmness 7%			
Scores	C	F	M	Scores	C	F	M
1	-	73	75	1	-	0	6
2	63	76	70	2	6	12	9
3	73	68	69	3	7	7	10
4	58	41	65	4	6	0	0
5	100	67	63	5	0	0	0

Color 48%				Preferred Beef; Bought Pork 16%			
Scores	C	F	M	Scores	C	F	M
1	-	45	56	1	-	27	13
2	44	50	54	2	25	14	18
3	48	46	46	3	15	18	15
4	52	53	38	4	3	0	14
5	33	50	45	5	33	50	27

[a]C = Color; F = Firmness;
M = Marbling

Table 2 lists the reasons consumers gave for purchasing pork. The questionnaire allowed consumers to indicate several reasons if they desired. Within each sub-table are listed percentages of the loins in each score category for which a consumer responded that leanness etc. was a factor in purchasing. The predominant reason for selecting pork in the study was leanness (81%). Eighty six percent of the chops with a 3 marbling score evoked a leanness response from consumers while 100% of the 5 scores for color (n=3) and firmness (n=6) elicited the leanness response. Even though the numbers are small, apparently consumers considered a darker, firmer chop to be leaner.

Price was the second most frequently indicated reason for purchasing (69%). Perhaps consumers felt they were getting a bargain by purchasing chops that were dark and less firm with less marbling (Table 2). Although color was indicated as a reason for purchase by 48% of the consumers, weight by 32% and firmness by 7%, no trend was apparent among the various quality traits and scores. Wachholz, et al. (1978) indicated that some consumers may select for normal pork color but others may prefer dark and pale colored pork. No one marked marbling on the questionnaire, which was explained as fat within the muscle, or eye muscle size as reasons for purchase. When asked if they preferred beef, but purchased pork as a second choice, only 16% agreed. The farther the quality scores moved away from 3, especially toward the dark, firm, highly marbled end of the scale, the higher percent of consumers preferred beef.

CONCLUSION

In this study consumers did not find problems with the palatability of pork with a normal range of quality attributes from Illinois show pigs. Consumers clearly indicated that the most important reason for purchasing pork was leanness. Price was of secondary concern, with color and weight mentioned, but of lesser importance.

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