

**OPTIONS FOR THE PRODUCTION OF LAMB CARCASSES
FROM GREEK DAIRY BREEDS OF SHEEP****3. Markets and consumers**

**D. Zygoiannis, A. Yannakopoulos, C. Stamataris, N. Katsaounis,
J. Doney, E. Sossidou**

Introduction

Preliminary discussions with meat retailers and a wide sample of general public indicated some 46% of the public consume lamb meat at home only on special occasions such as Christmas and Easter. Only 11% of the consumers serve lamb at home every week. Some 68% of the respondents prefer to purchase lamb from their local traditional butcher. Generally they demand a particular joint; the most frequent being the leg (40%).

Freshness of meat and content of fat in the carcass influence consumer choice. Related to the latter characteristic in consumer's attitude to local purchase, is size of carcass (big=fat) and health (fat=unhealthy). An impression of some flexibility in consumer choice was given provided that a range of presentation cuts could have been made available.

Two trials were conducted: The first, to assess the visual acceptability of whole carcasses from larger lambs and traditional cuts. This trial involved both butchers and consumers. The second, to evaluate the consumer discrimination between a wide range of carcass weights of the three breeds when presented as meat cooked by standard procedures.

*Materials and Methods**Visual demonstration and assessment*

For the visual acceptability test, five matched pairs of lambs were slaughtered to predetermined liveweights. The carcasses were dressed, assessed for fat class and frozen until required. One lamb from each pair was kept for display as a whole carcass. The other lamb was jointed and one leg and six rib chops were placed in trays for display.

This paper was presented on 46th Meeting European Association for Animal Production, 4-7 September 1995, Prague.

Department of Animal Husbandry, Faculty of Veterinary Medicine, Aristotle University, 54006 Thessaloniki, Macedonia, Greece.

Table 1. - LIVEWEIGHTS, CARCASS WEIGHTS (KG) AND ASSESSED FAT CLASS OF THE LAMBS OF THE THREE BREEDS

Breed	Liveweight	Carcass weight	Fat class
Boutsko	30.0	13.6	3H
Serres	30.0	13.3	3L
Karagouniko	30.0	13.5	3L
Karagouniko	38.5	18.2	3H
Karagouniko	48.5	22.3	4

The selected joints and the whole carcasses were individually displayed to survey respondents in an air conditioned room in the sequence shops-legs-carcasses. The sequences of the five lambs within each set of samples were randomised in order to reduce bias. Respondents were kept strictly apart during the test.

Different questionnaires were used for butchers and consumers. The consumer one included 6 questions on acceptability of the samples displayed. The butcher questionnaire included 10 questions about the lamb samples.

Completed questionnaires were received from 112 consumers and 30 butchers.

Taste panel evaluation

Within each year of the project a number of lambs were used in a taste panel evaluation involving a wide range of carcass weights. The feeding and management of the lambs were exactly as in the main experiment for the year.

Following slaughter carcasses were dressed, chilled and then jointed. The leg joints from each of the carcasses were frozen in sealed vacuum-packed bags until the time of the test.

The frozen samples were thawed and cooked in sealed cooking bags in an oven to the same internal temperature of 75°C. After cooking the meat was held in a warming cabinet at 55°C. Cubes of meat 2×2×2 cm, trimmed of exterior fat were prepared. Samples were served warm to 20 panellists at intervals of 10 minutes. Nine samples were served per session and one session was conducted daily. Panellists completed a score across four attributes: Flavour, juiciness, tenderness and overall palatability.

Results and Discussion

Visual appraisal by butchers

The responses to questions on the three breeds at equal liveweight and carcass weight (30 kg and 14 kg, respectively) as the "yes" answers are shown in Table 2.

Table 2. - BUTCHERS RESPONSE TO BREED DIFFERENCES (PERCENTAGE "YES" RESPONSE)

Question	Boutsko	Serres	Karagouniko
Are the chops acceptable?	37	33	73
Would you trim any fat?	0	0	0
Are the legs acceptable?	66	66	40
Would you trim any fat?	3	13	10
Is the whole carcass acceptable?	63	40	40
Would you trim any fat?	0	3	10
Is it too large for consumers needs?	0	0	3

The answers to the above questions indicate a certain amount of confusion in selection criteria. The reversal of order between K and the other breeds for acceptability of chops to that of leg or whole carcass, suggests that conformation plays a role in selection. The chops clearly disclose the fat level and the overfat Boutsko is down-graded. However, the higher proportion of fat in a smaller sized animal improves the external appearance of both the leg joint, as presented, and the whole carcass on the hook.

The responses to the three weights (and fat levels) of the K breed are shown in Table 3.

Table 3. - BUTCHERS RESPONSE TO CARCASS WEIGHT DIFFERENCES WITHIN THE KARAGOUNIKO BREED (PERCENTAGE "YES" RESPONSE)

Question	14 kg	18 kg	22 kg
Are the chops acceptable?	73	40	13
Would you trim any fat?	0	67	70
Are the legs acceptable?	40	13	17
Would you trim any fat?	10	77	83
Is the whole carcass acceptable?	40	13	3
Would you trim any fat?	0	3	93
Is it too large for consumers needs?	0	10	97

The answers confirm that the concept of conformation does play a role in selection in addition to discrimination against fat. The Karagouniko is a long leggy breed, hence the low score of even the lower weight with an acceptable fat class, in both leg joint and carcass. The fat level of the 14 kg carcass would appear to be optimum; 18 kg is still acceptable but at 22 kg it becomes relatively unacceptable.

Visual appraisal by consumers

The consumers responses to their set of questions are shown in Table 4 (breed comparison) and Table 5 (weight comparison).

Table 4. - CONSUMER RESPONSES TO BREED DIFFERENCES (PERCENTAGE "YES" RESPONSE)

Question	Boutsko	Serres	Karagouniko
Are the chops acceptable?	29	28	50
Are the legs acceptable?	24	44	46
Is the whole carcass acceptable?	54	22	23
Is the carcass too fat?	0	1	1
Is it too large for the family?	12	13	13

The answers again show a certain amount of confusion in selection criteria, probably involving a discounting of fat in favour of an apparently better conformation. The K breed had a significantly higher acceptability as chop or as leg cuts, but this was reversed when the whole leggy carcass was viewed.

Table 5. - CONSUMER RESPONSES TO CARCASS WEIGHT DIFFERENCES WITHIN THE KARAGOUNIKO BREED (PERCENTAGE "YES" RESPONSE)

Question	14 kg	18 kg	22 kg
Are the chops acceptable?	50	14	16
Are the legs acceptable?	47	13	10
Is the whole carcass acceptable?	23	11	4
Is the carcass too fat?	1	1	99
Is it too large for the family?	13	24	98

In these responses there is less confusion, chops of leg joints declined markedly in acceptability with increasing carcass weight and hence fatness. At 22 kg the whole carcass is clearly recognised as too fat and too large.

The higher acceptability ratings of the relatively unsophisticated cuts into chops or whole leg confirm that the consumers would probably be willing to increase their consumption of larger lamb carcasses in the 14-18 kg range providing they were offered a greater variety of more convenient cuts. It would appear that, in general, butchers consider some fat trim as a sufficient response to the consumer demands.

Taste Panels

The mean scores for flavour, overall palatability, tenderness and juiciness are shown according to breed and carcass weight range in Tables 6, 7, 8, and 9.

Table 6. - MEAN TASTE SCORE FOR FLAVOUR BY CARCASS WEIGHT AND BREED

Breed	<12 kg	12-16 kg	17-21 kg	22-26 kg	>26 kg
Boutsko	5.9	5.6	5.2	3.1	-
Serres	6.0	5.8	5.2	5.3	3.0
Karagouniko	6.0	6.1	5.6	5.5	3.1

Table 7. - MEAN TASTE SCORE FOR OVERALL PALATABILITY BY CARCASS WEIGHT AND BREED

Breed	<12 kg	12-16 kg	17-21 kg	22-26 kg	>26 kg
Boutsko	5.9	5.6	6.1	5.8	-
Serres	5.9	5.8	5.1	5.9	5.5
Karagouniko	6.1	6.1	5.6	5.8	5.6

Table 8. - MEAN TASTE SCORE FOR TENDERNESS BY CARCASS WEIGHT AND BREED

Breed	<12 kg	12-16 kg	17-21 kg	22-26 kg	>26 kg
Boutsko	5.6	5.3	5.4	5.2	-
Serres	5.3	5.5	5.2	4.7	4.3
Karagouniko	5.5	5.9	5.1	4.7	4.4

Table 9. - MEAN TASTE SCORE FOR JUICINESS BY CARCASS WEIGHT AND BREED

Breed	<12 kg	12-16 kg	17-21 kg	22-26 kg	>26 kg
Boutsko	5.2	5.1	5.1	4.9	-
Serres	4.6	5.1	5.2	4.0	3.8
Karagouniko	5.0	5.7	4.8	4.0	3.9

There were no significant differences in any character associated with breed or weight, except that the flavour score of the entire males tended to fall as they approached sexual maturity (at around 22 kg in B lambs and at over 26 kg in S and K). All breeds and weights tended to have a low score for juiciness and again this score fell with increasing weight.

The overall results of the taste panels indicate that on the whole, with mean scores of between 5 and 6 out of 8, the panellists do not discriminate between breeds or against heavier weight or even against apparent fat level providing that they are not influenced by sight of the whole carcass or cut from which the meat was derived.

Conclusions

The visual appraisal trials together with the taste panel trials indicate the need for the retail trade to provide new methods of presentation of the larger carcasses and for an education campaign to inform consumers.