



Effect of Hang, Cut, Cook, Doneness on Eating Quality of Beef

J Tollerton, L Farmer, B Moss, N Gault, E Tolland,
D Devlin, R Polkinghorne, J Thompson, A Gee
Agri-Food and Biosciences Institute, Newforge Lane, Belfast

www.afbini.gov.uk



DARD Project on Beef Eating Quality

- Collaboration
 - DARD Food scientists
 - NI Beef Industry
 - LMC
 - MLA
- 3 year programme of research
- BEQMS for NI industry



BEQ Experiments

- Muscle/cut
- Hang
- Doneness
- Cooking method
- Consumer country
- Ageing
- Dairy versus beef breeds
- Time in lairage and clipping

Expts 1+2

- Fasting (stress) and mixing
- Electrical stimulation
- Gender.



Factors investigated - Expts 1 & 2

Hang

Achilles, tenderstretch

Cook

Grill, roast

Cut

Striploin, rump, knuckle,
topside

Doneness

Medium, well done

Country of consumer

N Ireland, Australia

Experimental Protocol

- Meat Standards Australia (MSA) methods
 - 24 animals
 - Achilles and Tenderstretch
 - More than 1400 consumers
 - Grill panels
 - Roast panels
- } Med & WD



Cooking Method



- Strict protocol for sampling, labelling, storage, etc.
- Cooked on Silesia clam grill or roasted in ovens to “medium” or “well-done” (defined by internal temperature)



Consumer taste panels



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Sample 1

RST Rnd Tstr
20 1 1
T35J

T35J

Please rate the beef sample you have just eaten, for each of the categories below, by placing a single vertical mark on the appropriate line scale.

Tenderness |-----|
Not Tender |-----| Very Tender

Juiciness |-----|
Not Juicy |-----| Very Juicy

Liking of Flavour |-----|
Dislike Extremely |-----| Like Extremely

Overall Liking |-----|
Dislike Extremely |-----| Like Extremely

Please mark one of the the following boxes to rate the quality of the beef sample you have just eaten.
Choose one only (you must make a choice).

Unsatisfactory

Satisfactory everyday quality

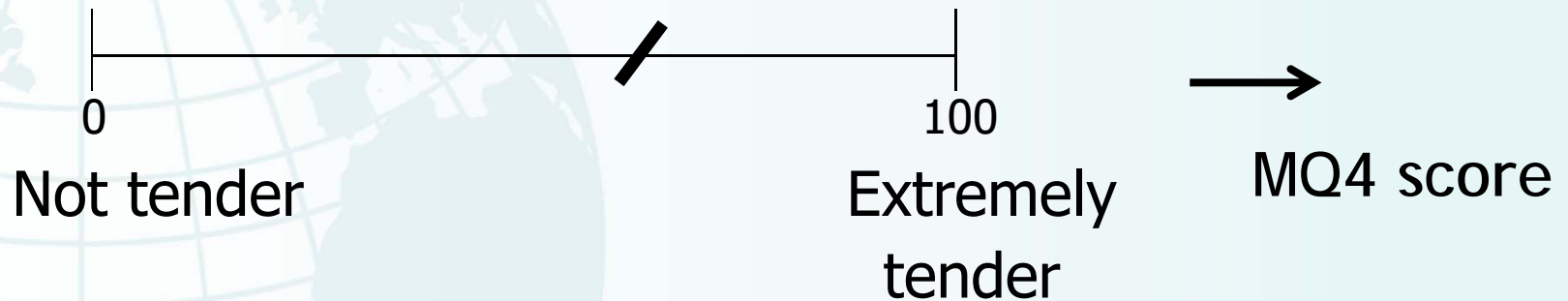
Better than everyday quality

Premium quality

+ +

Assessment of beef samples

- Tenderness, juiciness, flavour liking and overall liking, e.g.,



- Satisfaction

Unsatisfactory

Satisfactory everyday quality

Better than everyday quality

Premium

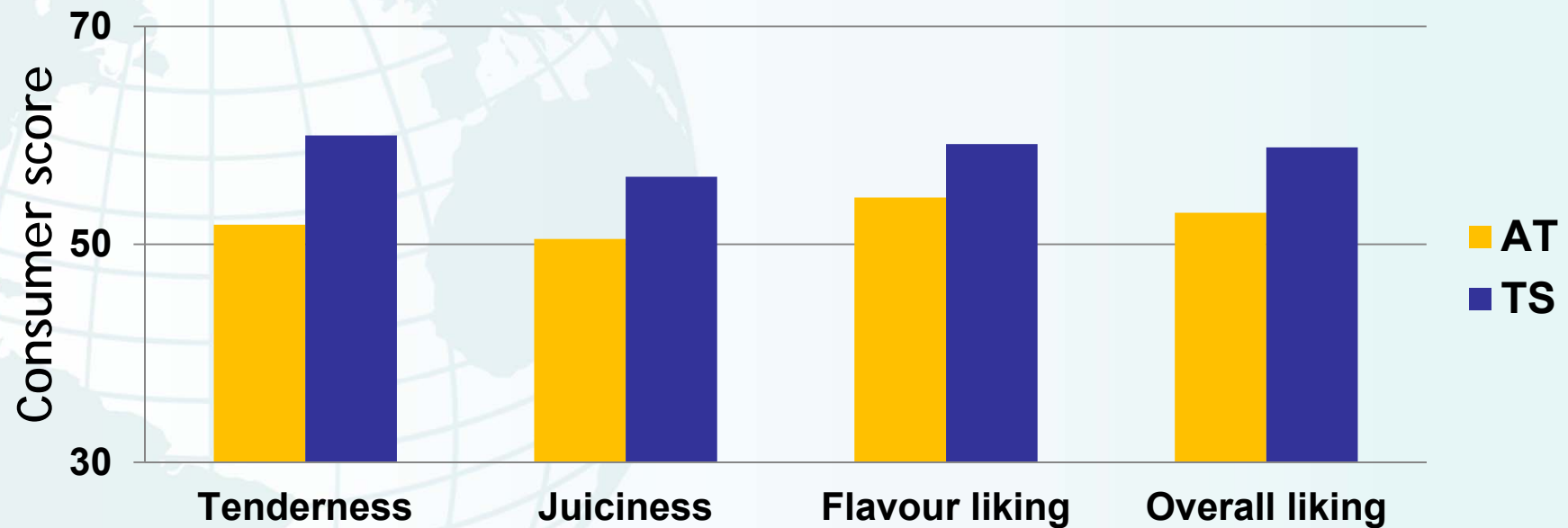




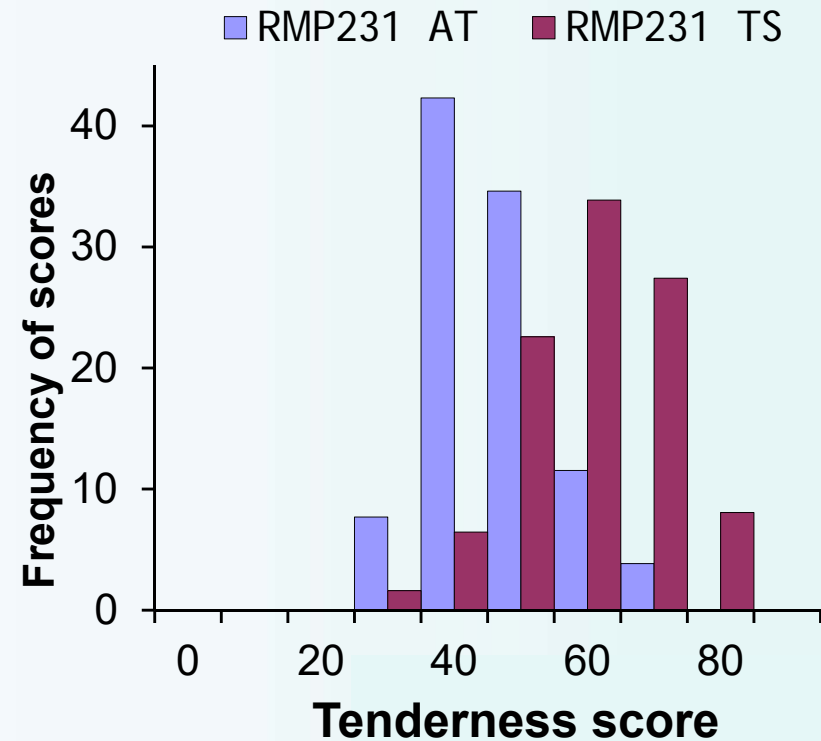
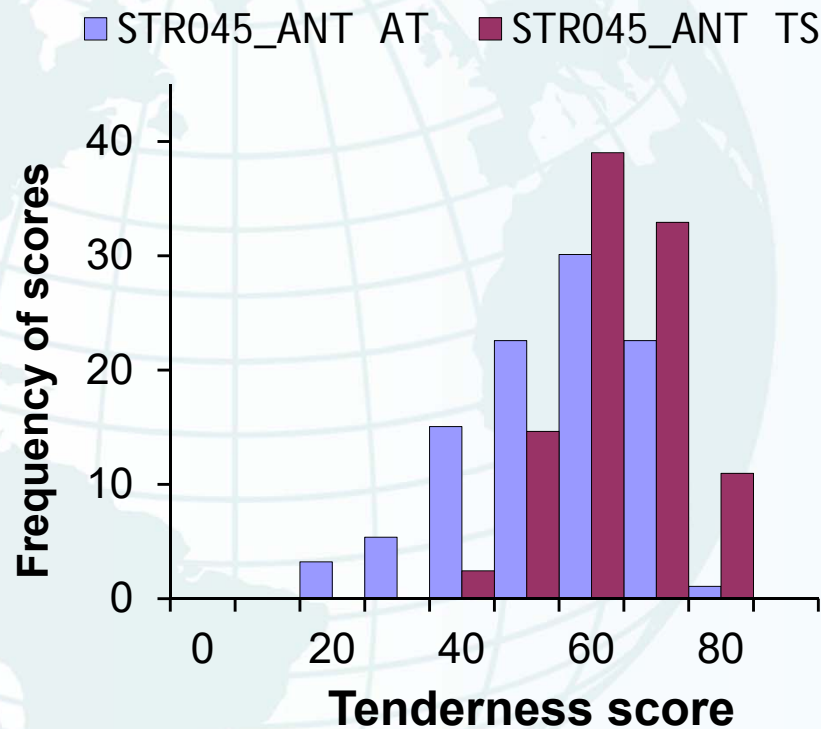
RESULTS



Effect of Hanging Method - Achilles vs. Tenderstretch



Effect of Hanging Method x Cut

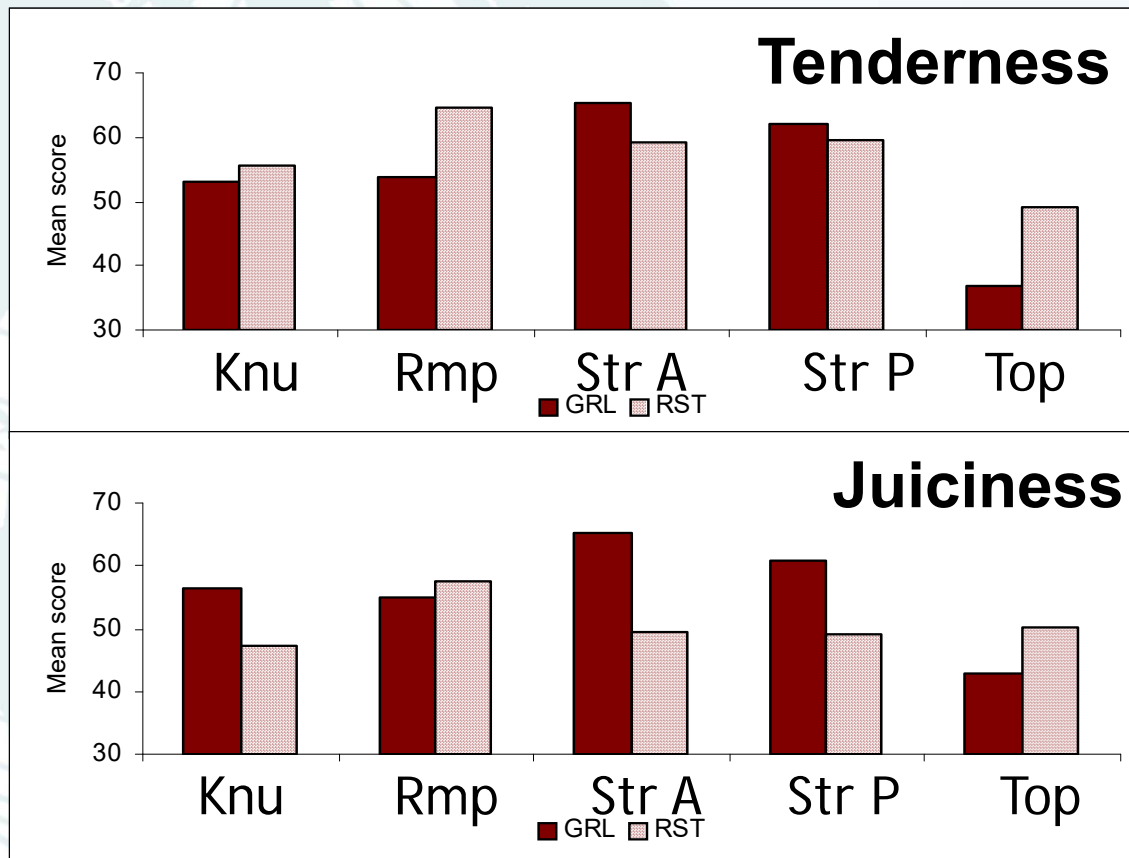


Cut

- Most important factor influencing EQ
 - Striploin > Rump > Knuckle > Topside when grilled
- Differences highly significant ($P < 0.001$)
- Position within same primal cut
 - Striploin - anterior, mid and posterior
 - Anterior scores up to 8 units higher than posterior when grilled
 - Rump - RMP 005, RMP 131, RMP 231
 - RMP 005 scores up to 5 units higher than the other two when roasted



Cut x Cook (GRL & RST)

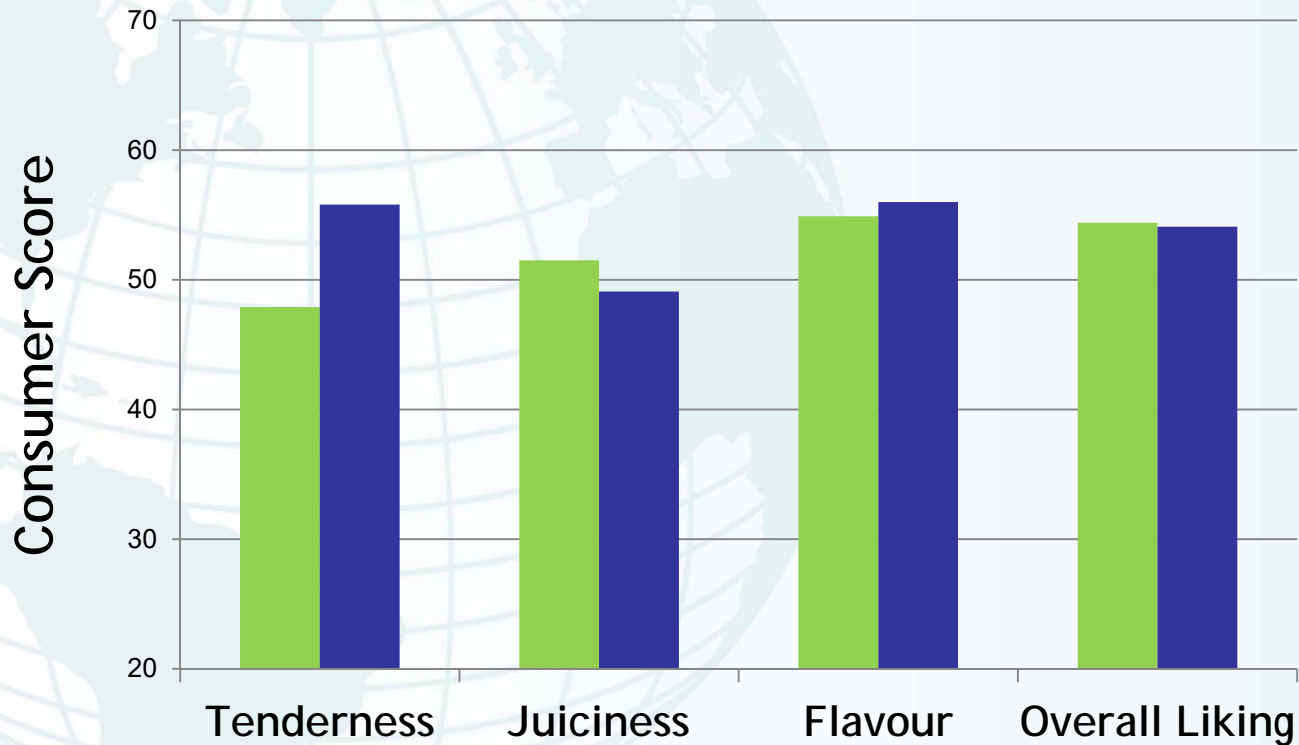


Cooking method - significant effect on all traits except flavour liking

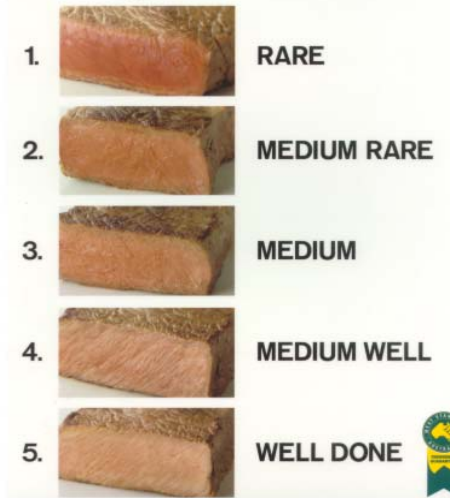
Striploin - higher scores when grilled than roasted

Rump and topside were better roasted

Doneness



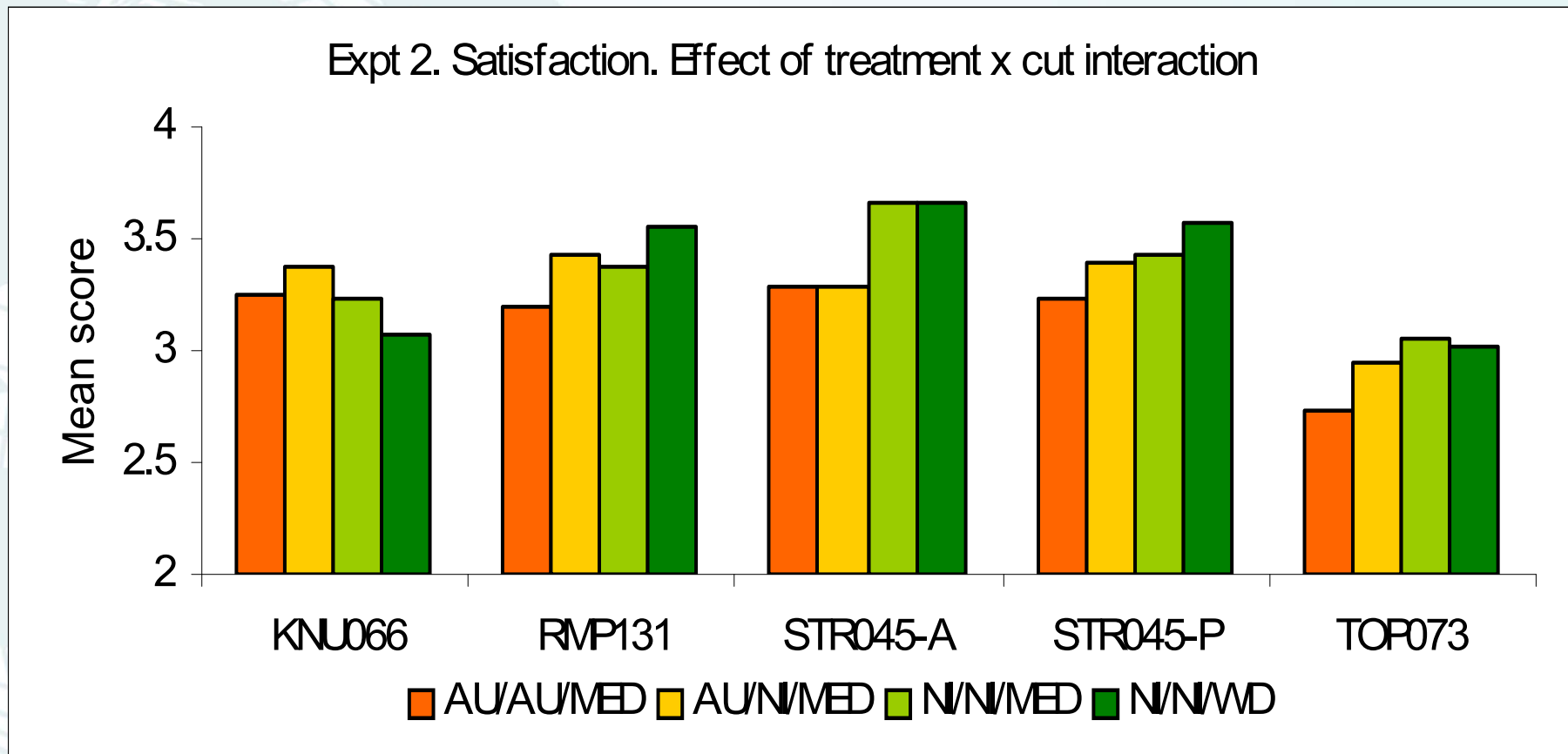
How would you like your steak?



MED

WD

Consumer Nationality



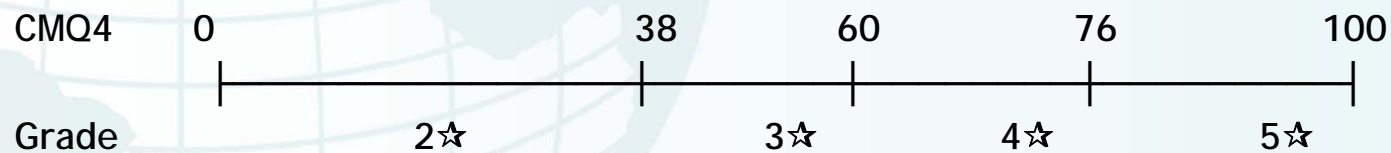
Results

Boundaries for Australian MSA model and NI consumers

Australia

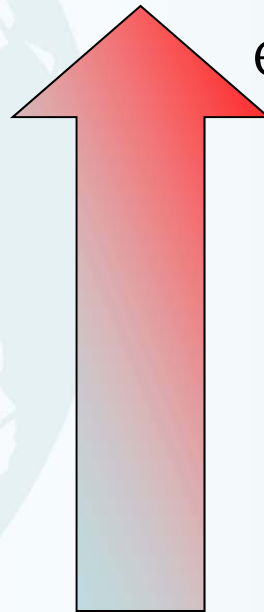


Northern Ireland



Conclusions

Cut or muscle
Position within muscle
Hanging method
Cooking method
Doneness
Consumer country



Large effect

Small effect

Interactions between varying factors must be taken into consideration when assessing quality

