

Tenderstretch and ageing time are key parameters for premium beef

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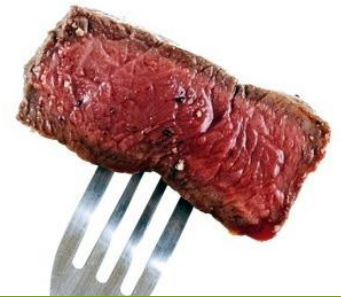
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Background

- Tenderness is one of the most important components of beef eating quality.
- However, it often fails to satisfy consumers hence contributing to reduce beef meat consumption.
- Australia has developed the Meat Standards Australia (MSA) grading scheme to predict eating quality of beef.
- Through large-scale sensory testing by untrained consumers, MSA has identified animal and carcass factors that impact on consumer palatability.

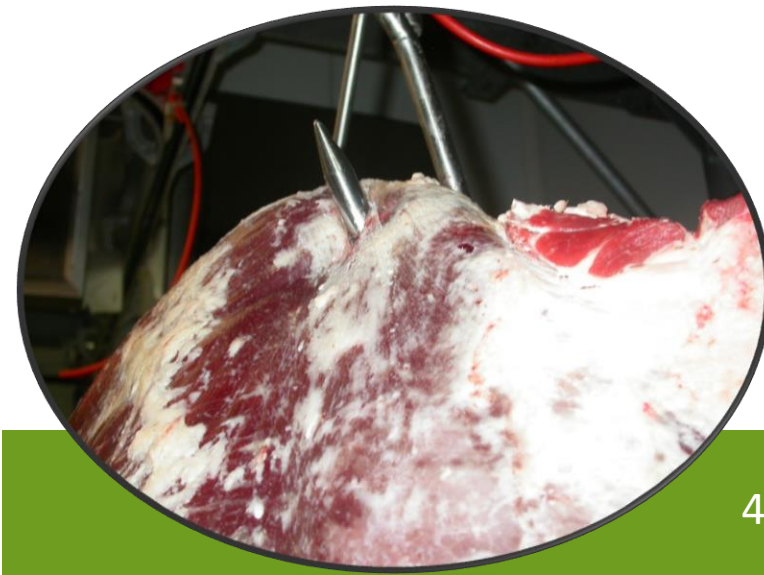
Background

- Positive effects of tenderstretching and ageing on tenderness have been known for a long time.
- Therefore, these factors are included in the MSA grading scheme.
- Using the MSA approach, an experiment was conducted for the Beauvallet French company to quantify the effects of two hanging methods and two ageing times on beef eating quality.



Material and methods

- Nine Limousine cows of 3 to 10 years of age
- Carcass weights ranged from 400 to 455 kg.
- One side was suspended from the Achilles tendon (AT) and the other side was tenderstretched (TS) until 48h *postmortem*, before normal chilling.

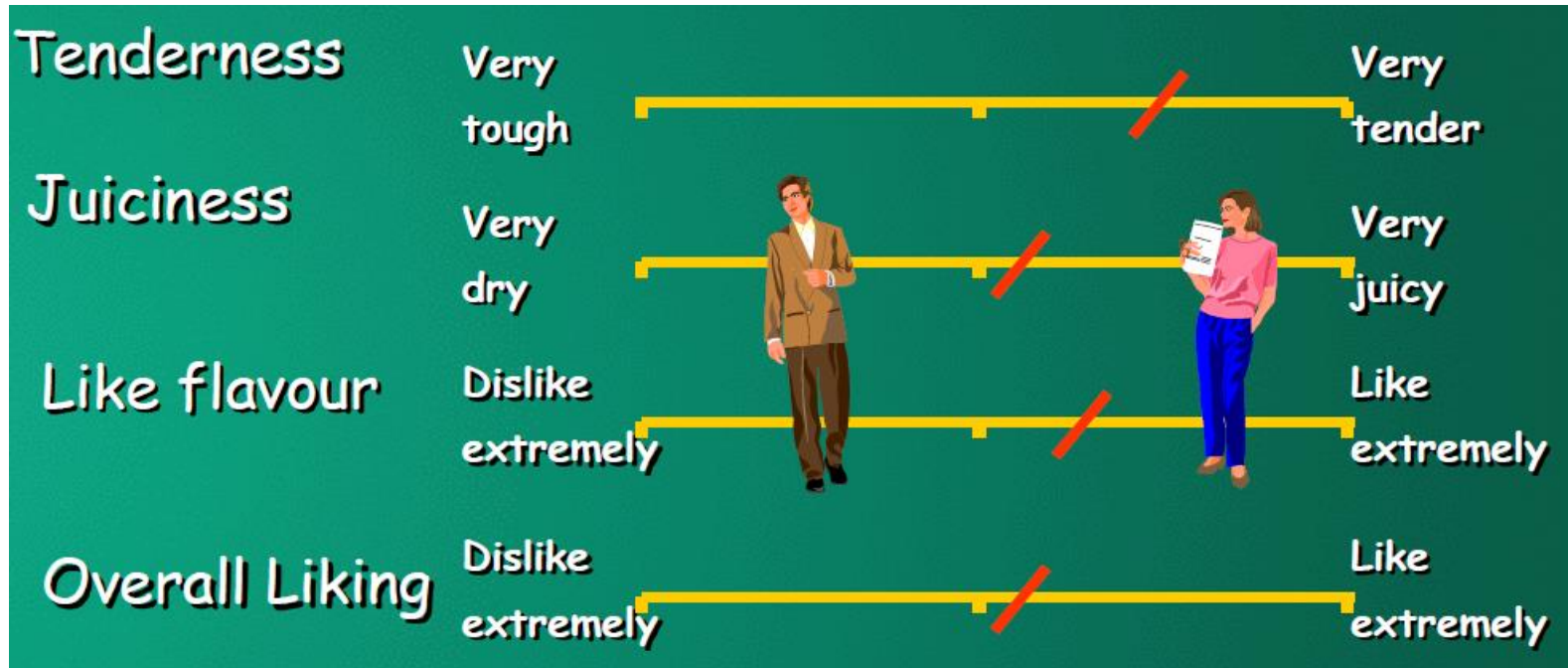


Material and methods

- Four muscles (striploin, cub roll, eye of rump, topside) were cut and allocated to 10 or 20 days of ageing.
- Muscles were assessed as rare grilled steaks by 240 consumers according to the MSA protocol.
- Beef samples were first scored for tenderness, juiciness, flavor liking and overall liking and then assigned to one of the four MSA quality grades proposed.



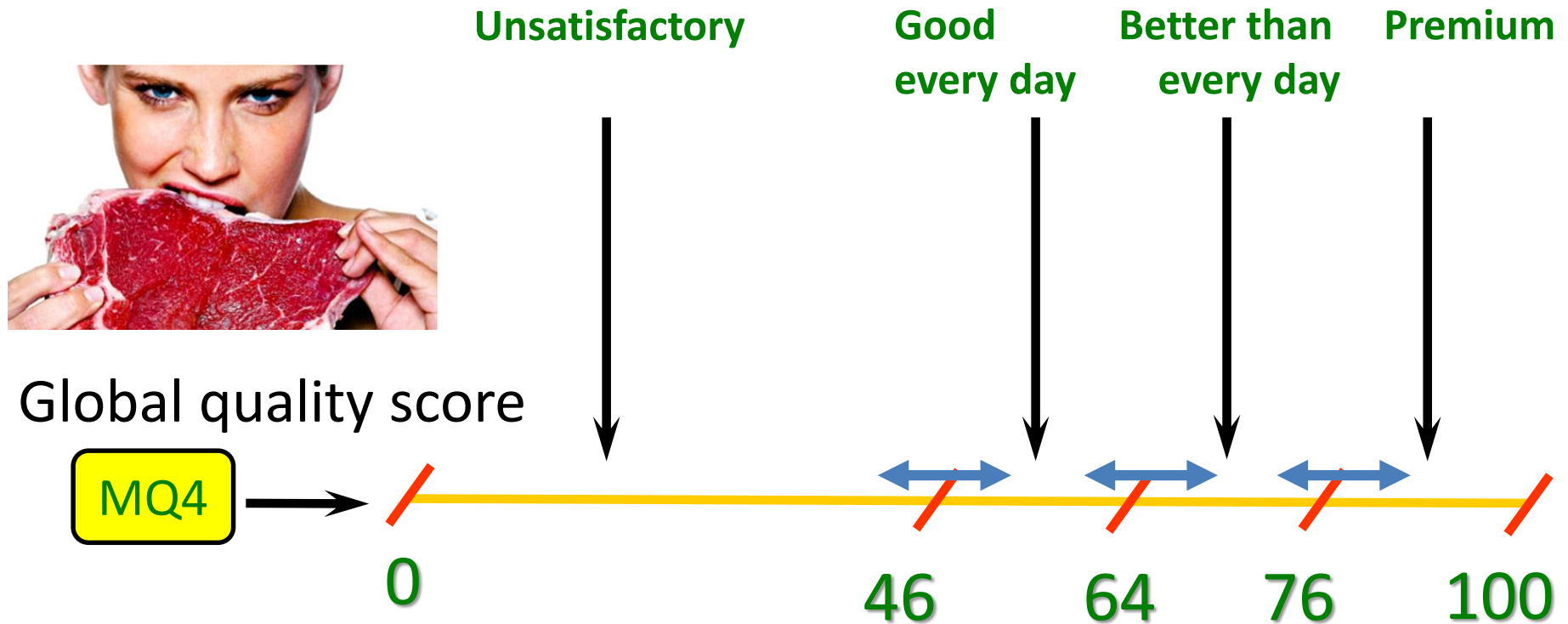
The Meat Standards Australia System (principles)



MQ4 (global eating quality score) =
30% Tenderness + 10% Juiciness
+ 30% Flavour liking + 30% Overall liking

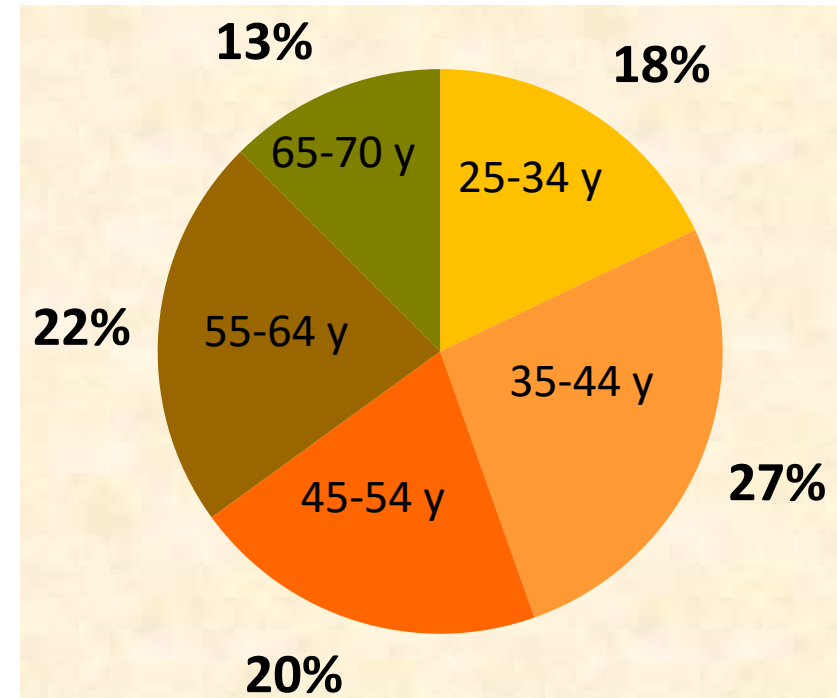
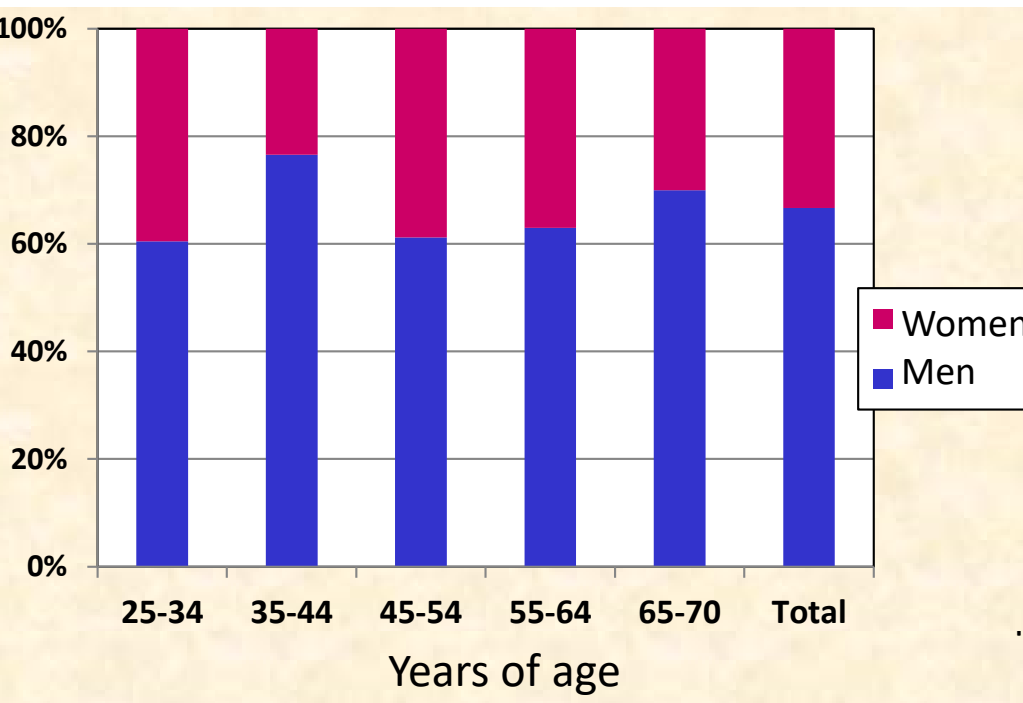
The Meat Standards Australia System (principles)

Consumers class meat as:



Results: consumer data

- Consumers (n=240) were 66,7% men
- Age distribution was fine



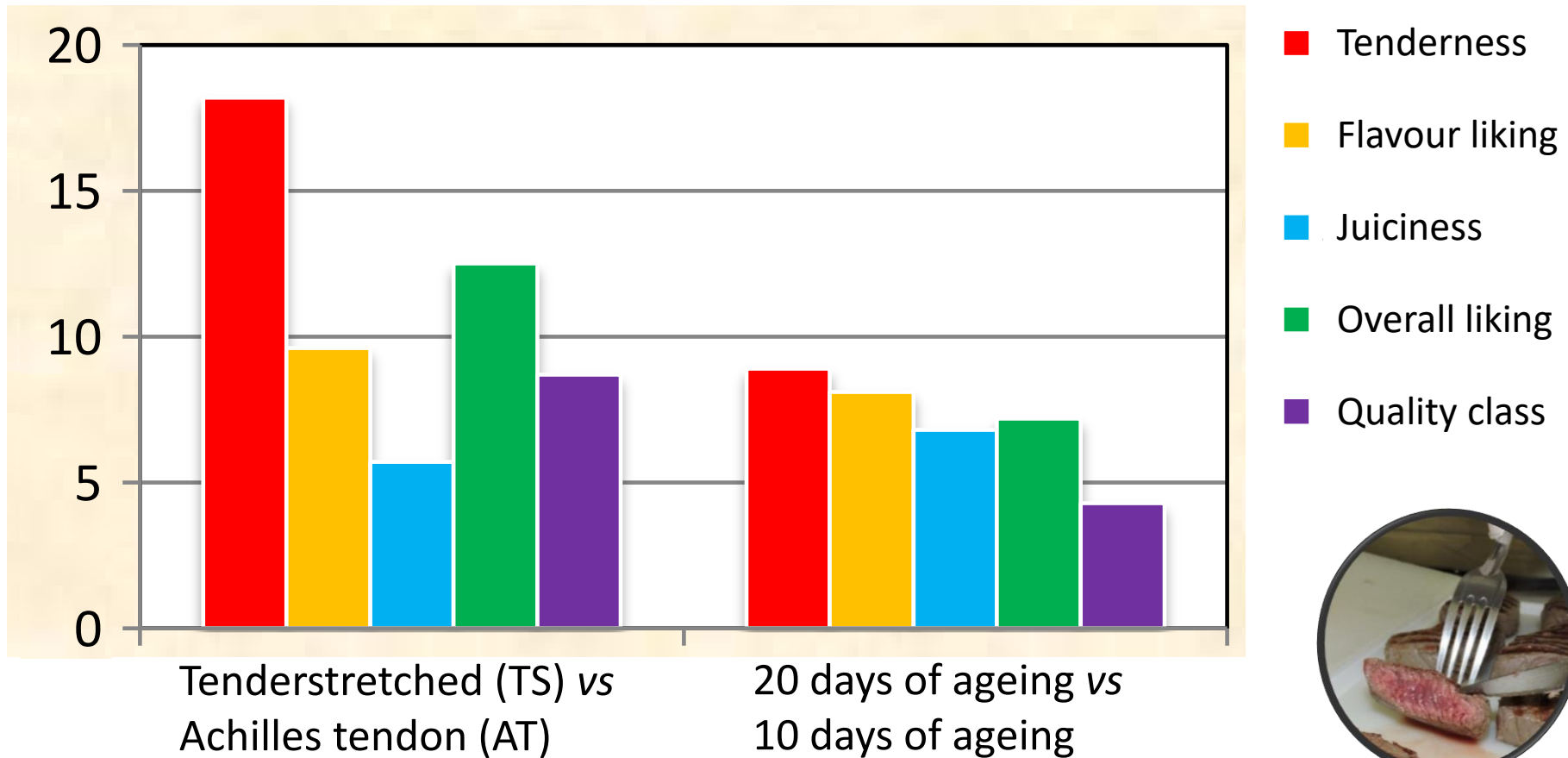
Results: statistical analysis of consumer testing



		Tenderness	Juiciness	Flavour liking	Overall liking	Class
Covariates	Testing session	NS	NS	NS	NS	NS
	Consumer number	***	***	***	***	***
	Animal number	*	*	*	*	*
Fixed effects	Hanging method	***	*	***	***	***
	Ageing time	***	**	***	**	*
	Muscle	***	***	***	***	***
	Carcass side	NS	NS	NS	NS	NS
	Hanging method X Ageing time	NS	NS	*	*	*

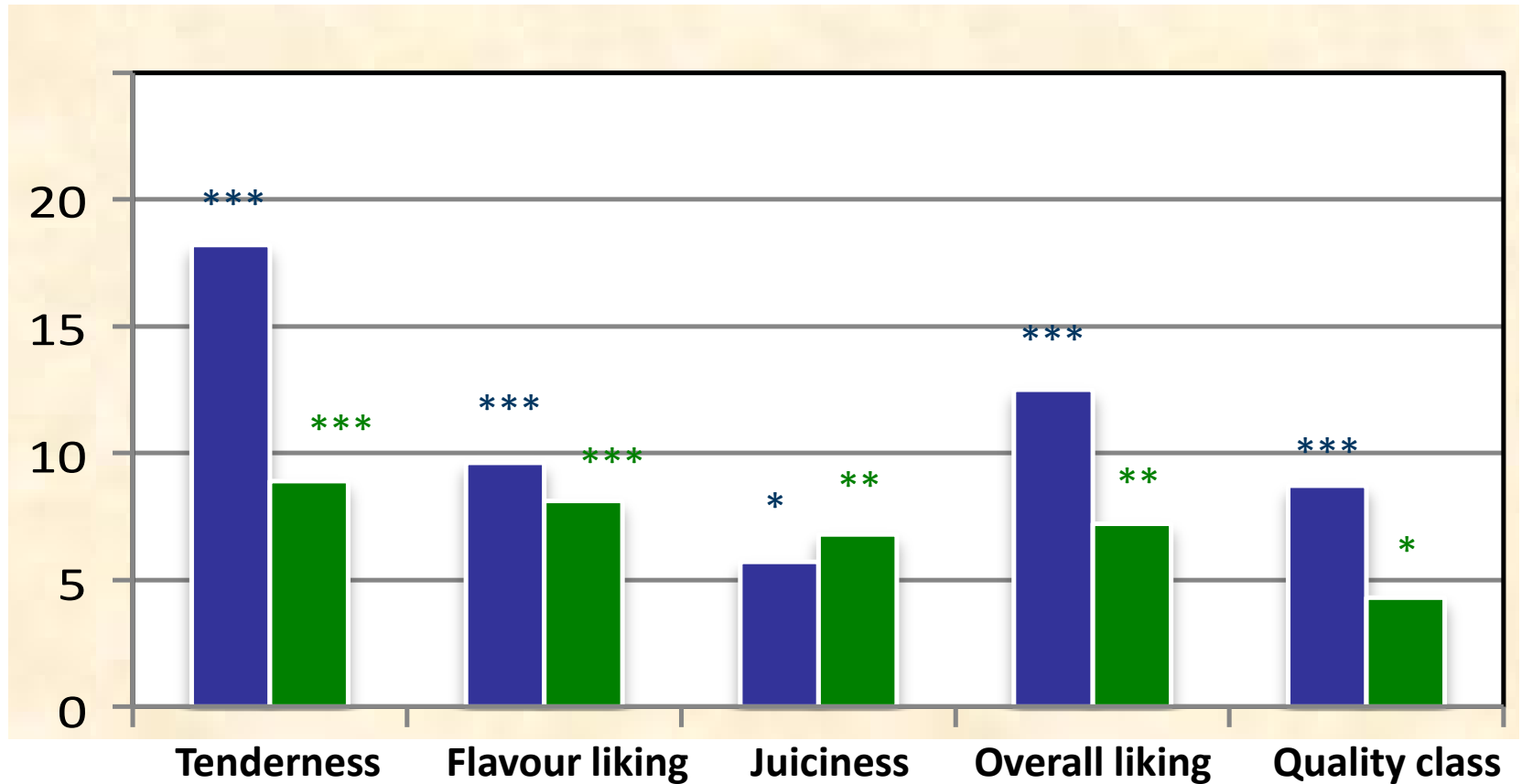
Results: quality improvement

Gain in %

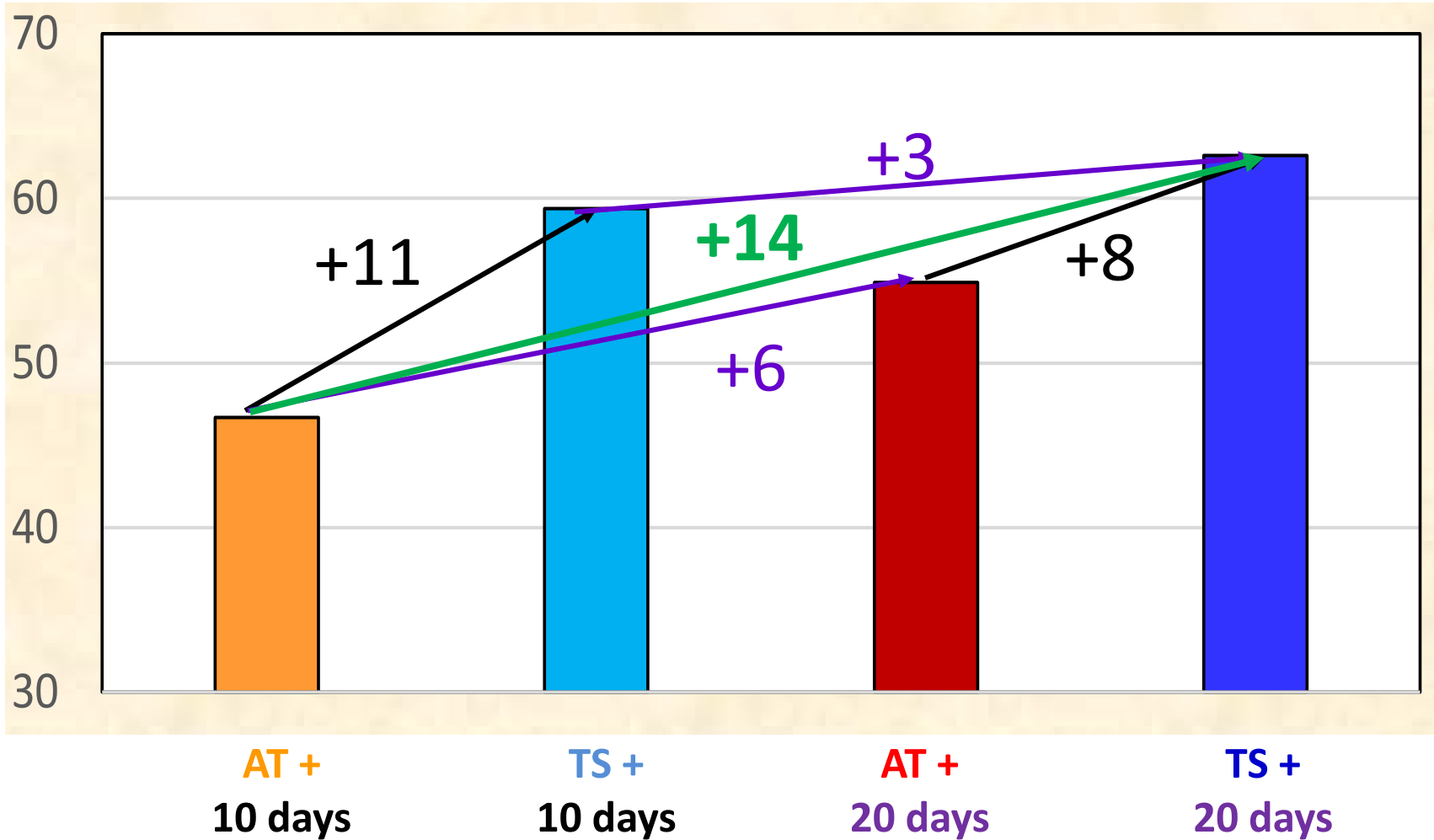


Results: quality improvement

Gain in % ■ Tenderstretched (TS) vs Achilles tendon (AT) ■ 20 days of ageing vs 10 days of ageing



Results: additive effects for tenderness improvement



Outputs: a new premium beef brand was launched



- Limousine cows
- Selection of four good cuts
- Marbling
- Tenderstretching
- Long ageing time (> 10 d)
- Grass-based livestock systems



Potential of grazed based systems

Beautiful landscape

Happy cows

PUFA-rich meat

Biodiversity

Natural feeding

Carbon sequestration

Conclusions

The MSA protocols were useful to check the major effects of tenderstretching and ageing time.

A new premium beef brand was launched.

Data of this experiment will be transferred to the “International Meat Research 3G Foundation” recently created to promote an international beef eating quality grading system under the auspices of UNECE.

