



Economic benefits of adopting Meat Standards Australia to the Beef Industry

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Session 12: Beef Production: Environmental and economic aspects and impacts
64th EAAP meeting, Nantes





Introduction

- What is the value of meat science to the community?
- The value of meat science to society relates directly to its' application and associated improvement in consumer value and industry sustainability.



SUMMARY

- The MSA grading scheme
- Adoption
- The economic returns to industry
- Willingness to pay for quality grades
- Carcase sorting to capture more value
- Developments in feedback
- Conclusions



Meat Standards Australia

- Industry need
 - Declining consumption
 - Confused description for eating quality
- Large sustained research & extension effort
 - A large collaborative national research input from Beef CRC; supported by industry bodies (producers, processors and retailers)
- Output
 - A commercial muscle (cuts) based grading model for eating quality



Meat Standards Australia (MSA)



- A product grading scheme focused on satisfying the consumer
- MSA uses grading & production inputs to predict eating quality

Description	Format	Name	Input	?
Estimated % Bos Indicus	% or X if doubt	EPBI	0	
Animal Sex Type	M/F	Sex	m	
Hormone Growth Promotent	Y or ? / N	HGP	n	
MilkFedVealer	Y/N	MFV	n	
SaleYard	Y/N	SIYrd	n	
Rinse/Flush	Y/N	RnFI	n	
Hot Std Carcase Weight	Weight in Kg	HSCW	260	
HangMethod	AT/TS/TL/TC/TX	Hang	at	
Hump Height	mm	Hump	45	
Ossification USDA	USDA measure	uoss	140	
Marbling USDA	USDA measure	umb	330	
RibFat	mm	RbFt	7	
Ultimate pH	Metered pH	UpH	5.58	
Loin Temp at Grade	Metered Temp C	Utmp	3	
Days of Ageing from Kill	Days Aged	Age	26	

Predictors

Muscle

Unsatisfactory
Good every day
Better than every day
Premium

- 3 ☆
- 4 ☆
- 5 ☆

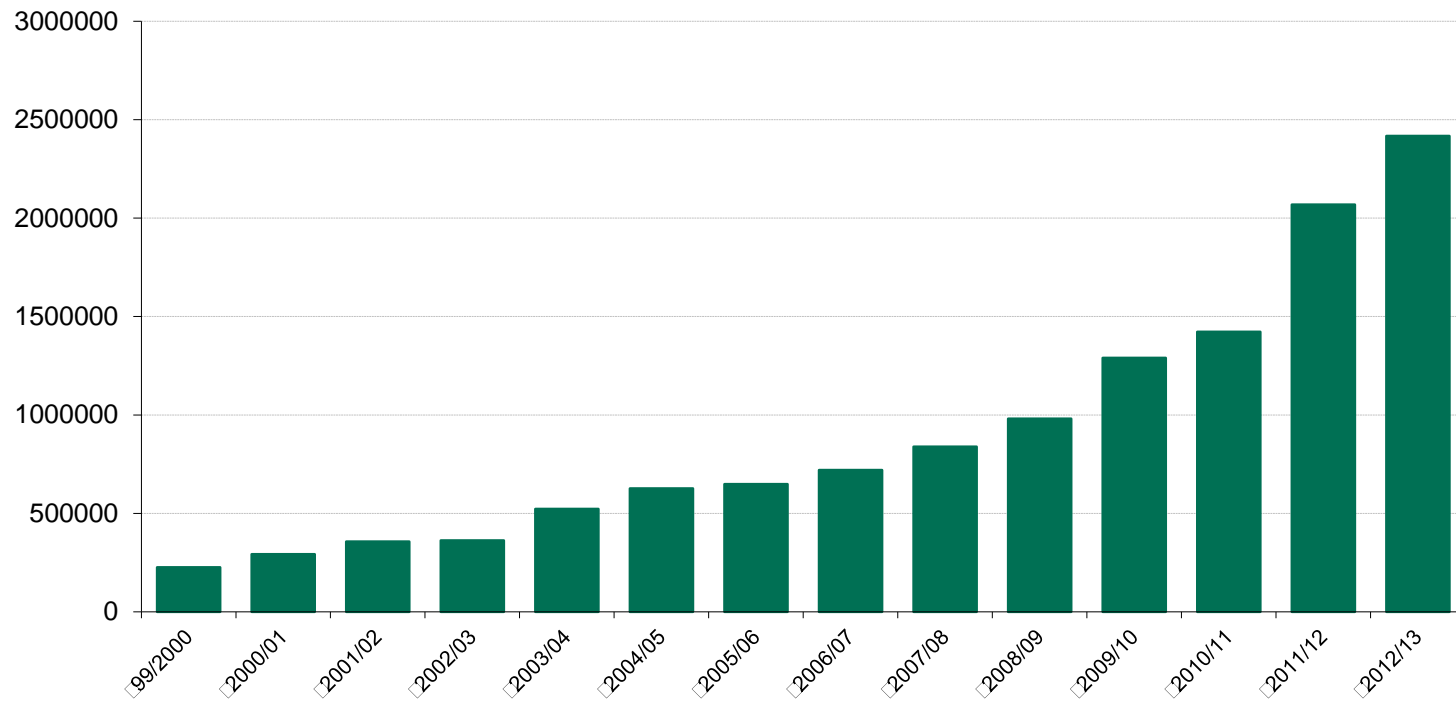
cut	muscle	GRL	RST	SFR
	Cook	80	70	80
	34	84		78
	62	80	79	82
tenderloin	TDGo62	78		
cube roll	CUBo45	70	71	70
striploin	STAO45	66	66	68
striploin	STPO45	64	65	68
oyster blade	OYSO36	69	66	72
blade	BLDO95			45
blade	BLDO96	58	62	64
chucktender	CTRO85		52	55
rump	RMP131	57	66	65
rump	RMP231	60	69	67
rump	RMP005	65	69	73
rump	RMP032			70
rump	RMP087		58	63
knuckle	KNU066	51	64	59
knuckle	KNU098			58
knuckle	KNU099	40	52	48
knuckle	KNU100			65
outside flat	OUT005	48	48	51
outside flat	OUT029			62
eye round	EYE075	51	55	53
topside	TOP001	45		57
topside	TOP033	41		58
topside	TOP073	40	49	49
chuck	CHKO68			50
chuck	CHKO74	62	58	63
chuck	CHKO78	57	59	60
chuck	CHKO81			62
chuck	CHKO82			54
thin-flank	TFL051			64
thin-flank	TFL052			73
thin-flank	TFL064			67
rib-blade	RIB041			52
brisket	BRI056			44
brisket	BRI057			41
shin	FQshin			
shin	HQshin			
intercostal	INTO37			58



Number of MSA carcasses graded per year

2.4 million in 2012/13

National MSA beef grading numbers



Approx 60% of yearling cattle graded (almost no cows are graded yet; plus many live export)

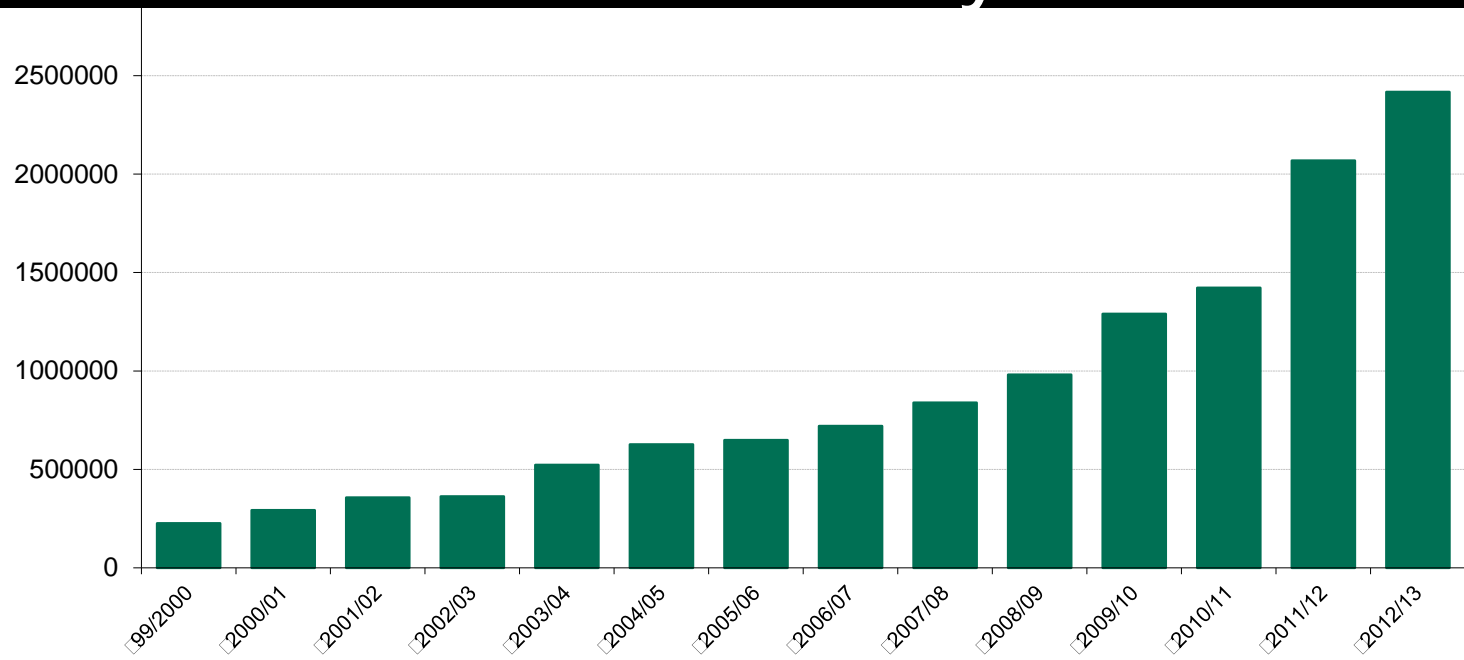


More statistics

- Approx 30,000 registered farms (90% cattle)
- 1,600 registered end users (wholesale, retail, supermarkets, food service)
- 76 brands underpinned by MSA
- 40% of Australian consumers are aware of MSA



Now have a large footprint BUT it took time = 10 years



Woolworths
Australia's fresh food people



Like yours tender,
juicy every time?

Look for the Meat Standards
Australia symbol.



Follow these tips for a succulent beef roast

- Preheat your oven to the recommended temperature (see table)
- Brush the roast with oil, season, and place it on a rack in a roasting tray





Remember it's a voluntary system !

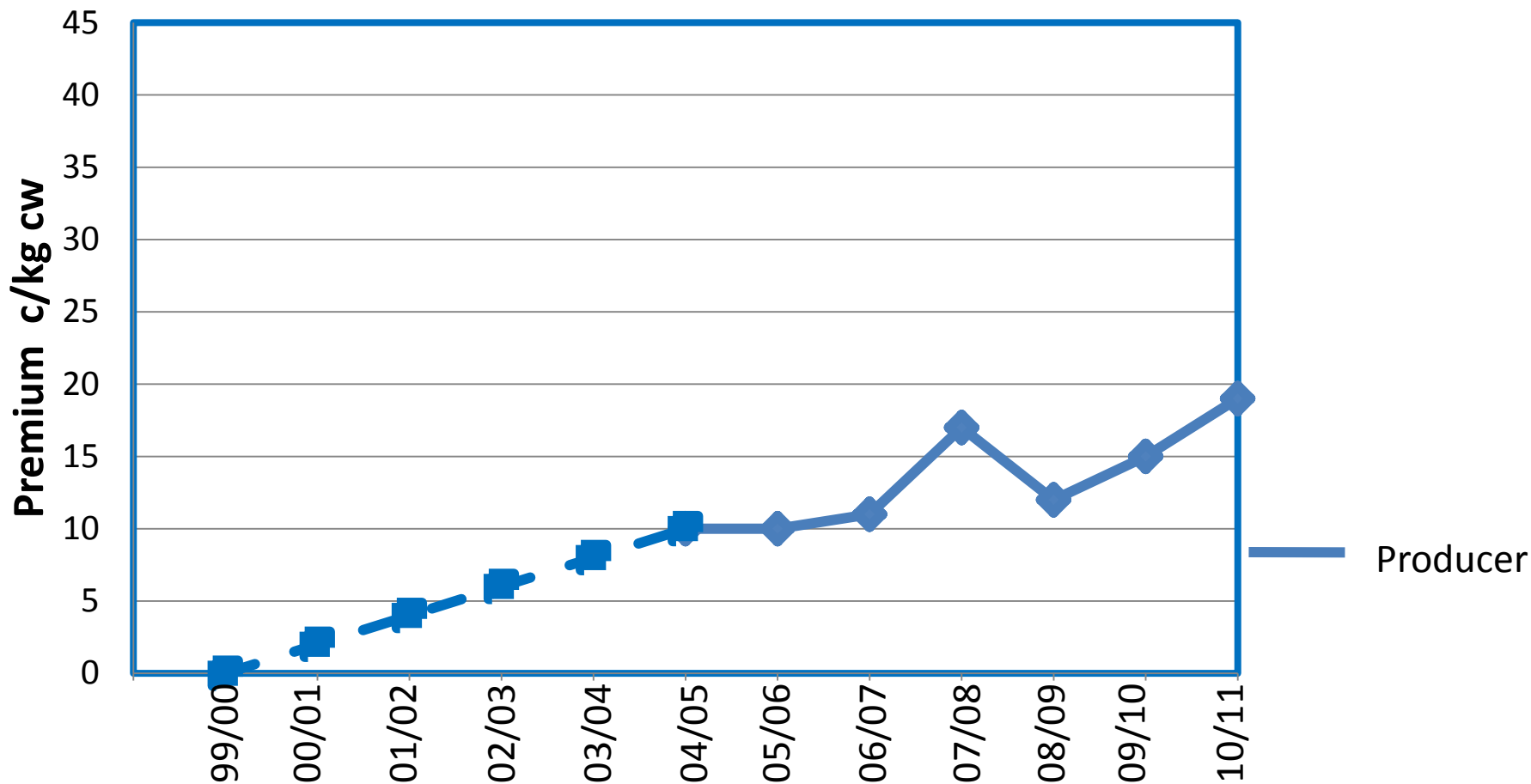


Economic benefits of MSA

From 2005 the processing, retail, food service and wholesale sectors were surveyed for prices of MSA and non-MSA carcasses & cuts

Producer or Farmer

Economic returns (c/kg cwt)





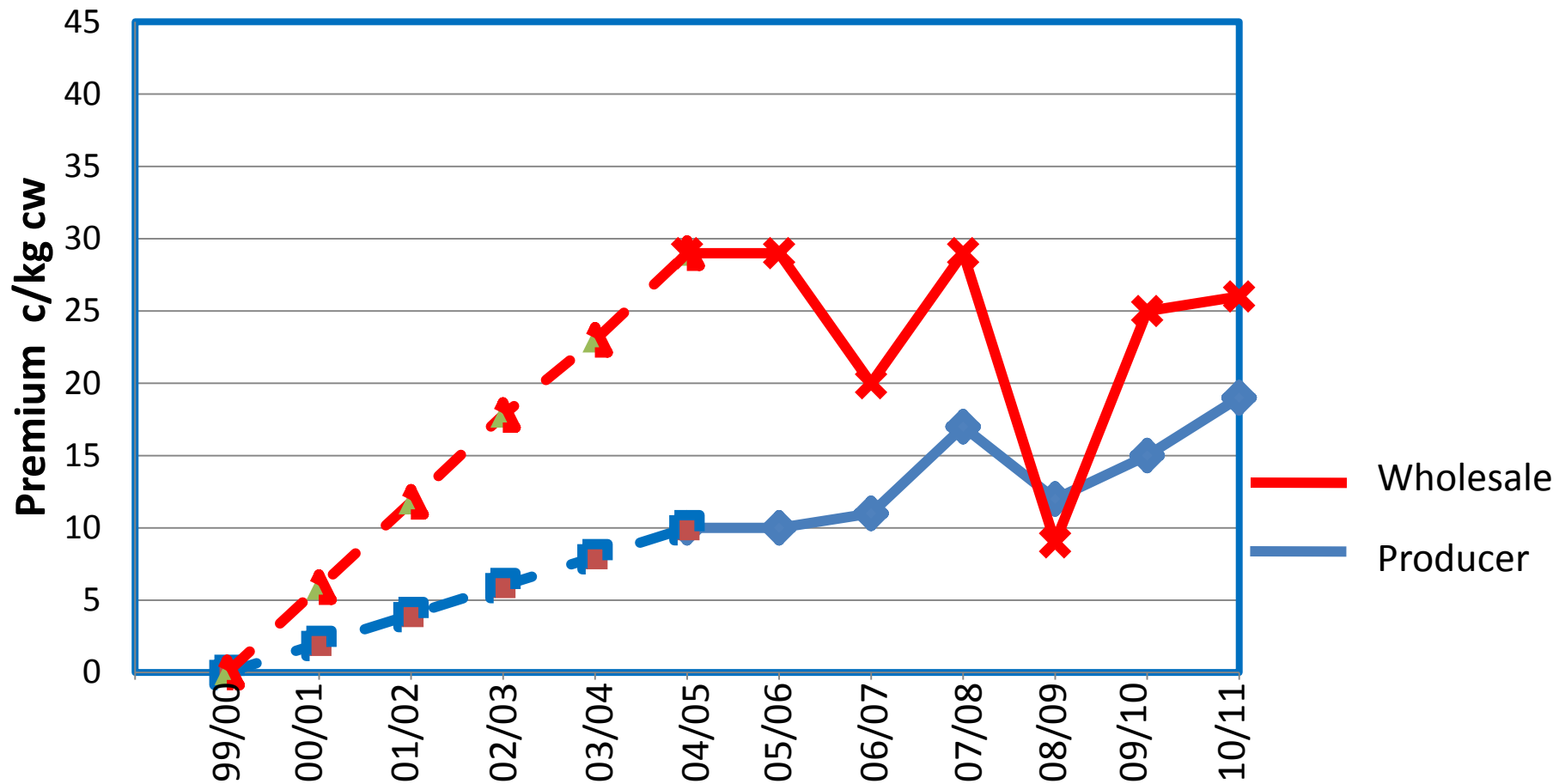
Producer or Farmer

How does it work for MSA cattle

- Currently processor has a basic carcass grid
- They offer a 30c/kg premium for MSA cattle
- If the carcass fails to grade
 - = 40c/kg discount
 - = 10c/kg discount on the original grid
- Nationally 5% failure rate (pHu, meat colour)

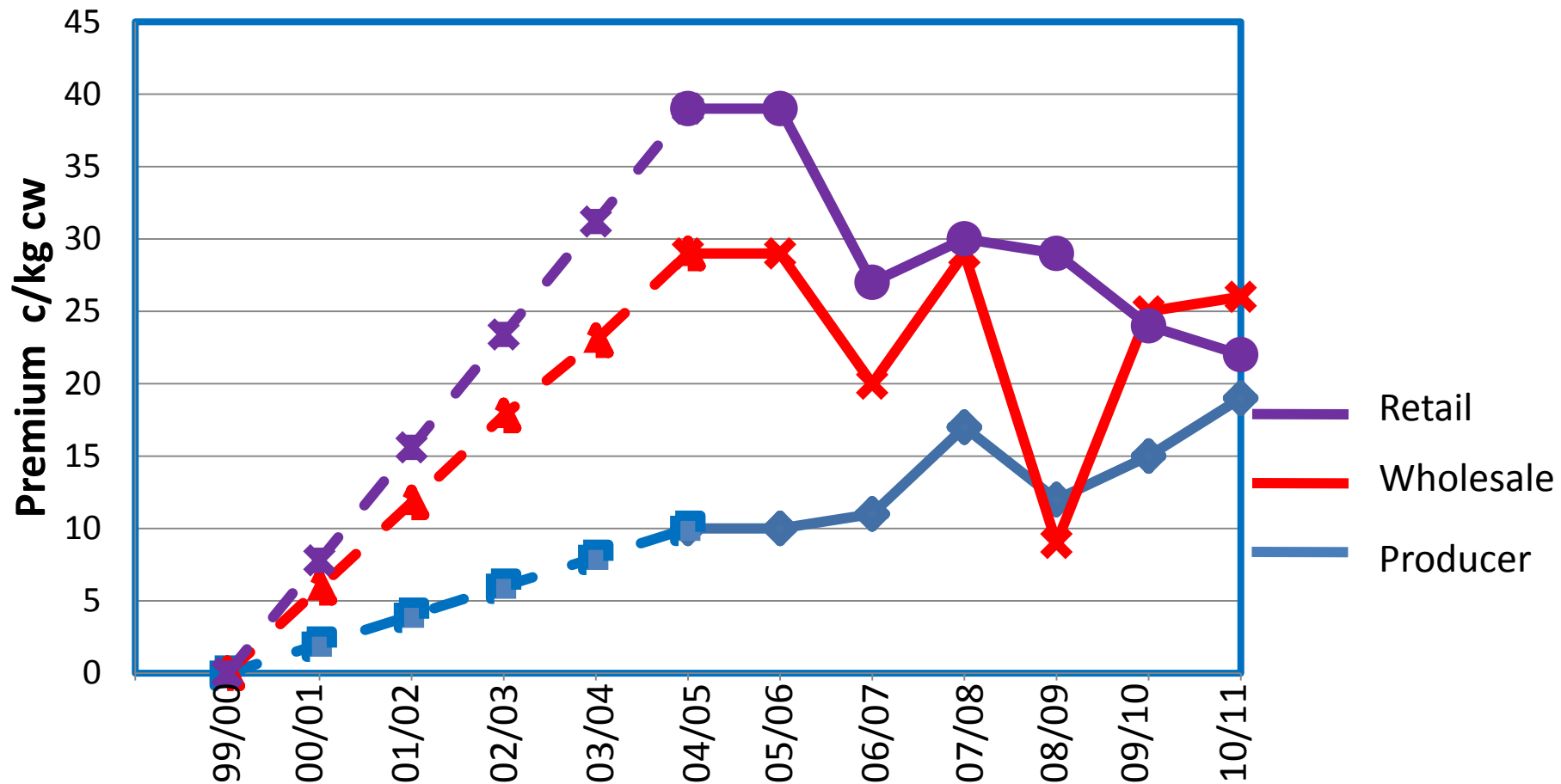


Economic returns (c/kg cwt)





Economic returns (c/kg cwt)



Everyone benefits



6.2 : 1



1.7 : 1



1 : 1



Current Usage of MSA

- Rather than using the three grades most wholesalers and retailers simply use 3 star as a threshold trait
- Retail benefits are slowly declining – need to look for the next opportunity



What does this symbol tell consumers about the level of eating quality?



Nothing other than it doesn't
fail



Is there value in using
the grades ?





Will consumers pay a premium for higher grades of eating quality?





Sensory questionnaire

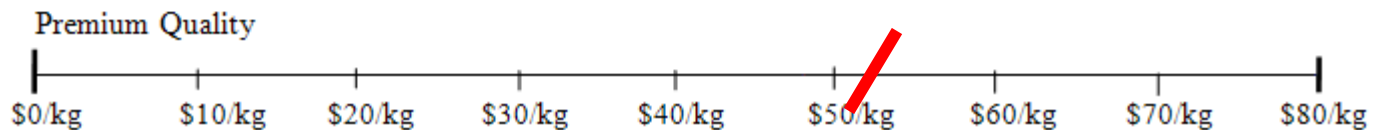
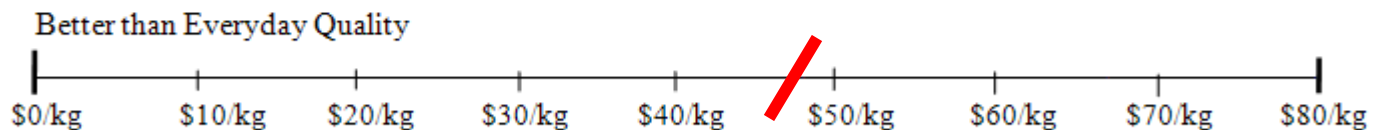
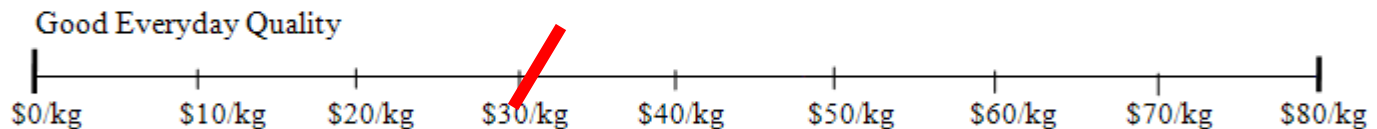
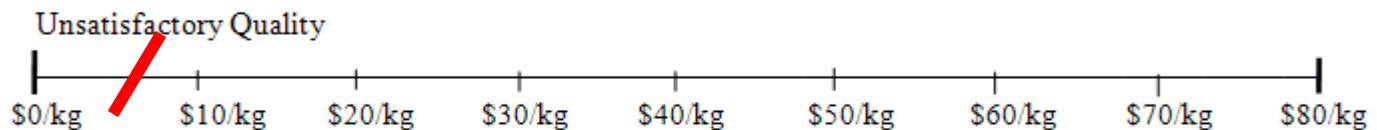
We added an extra question page asking about willingness to pay (WTP) for the grades (fail, 3, 4, 5 *) of beef consumers had just eaten



Date: _____ Group Name: _____

I.D. Number : _____

Based on the beef you just consumed: Please mark the line at the price per Kg you believe best reflects the value for each category.



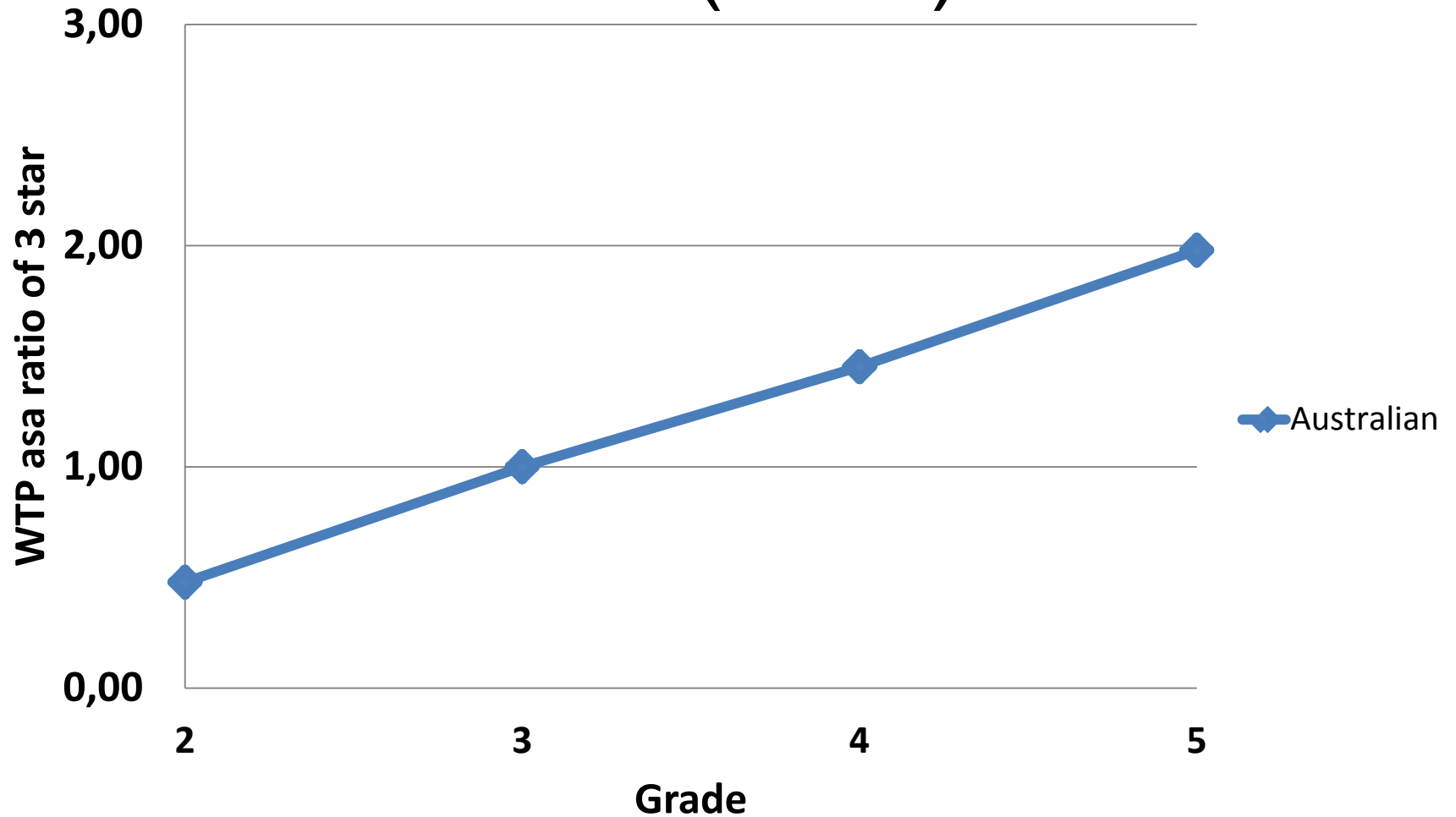


WTP data sets

Consumer Origin	No. of consumers	WTP estimates	Cooking Methods
Australia	8100	AUD\$/kg	Grill, roast, thin slice
Japan	1620	Yen/100g	Grill, yakinnu, shabu shabu
USA	1440	US\$/lb	Grill, roast
Irish	1280	Euros/kg	Grill, roast, thin slice
South Africa	720	Rand/kg	Grill, stew
France	540	Euros/kg	Grill, roast
Poland	900	Zloty/kg	Grill, stew

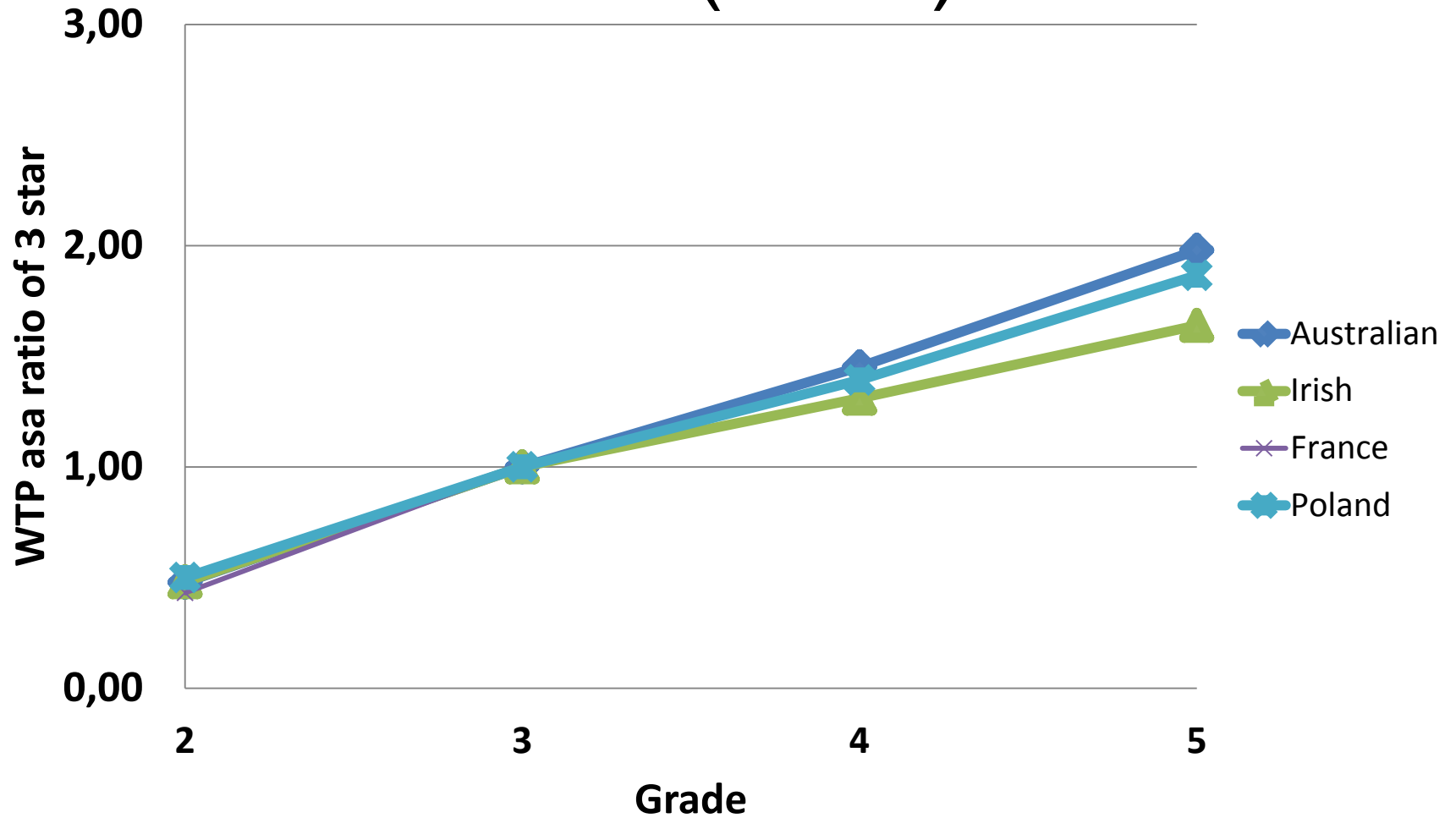


WTP (3*=1)



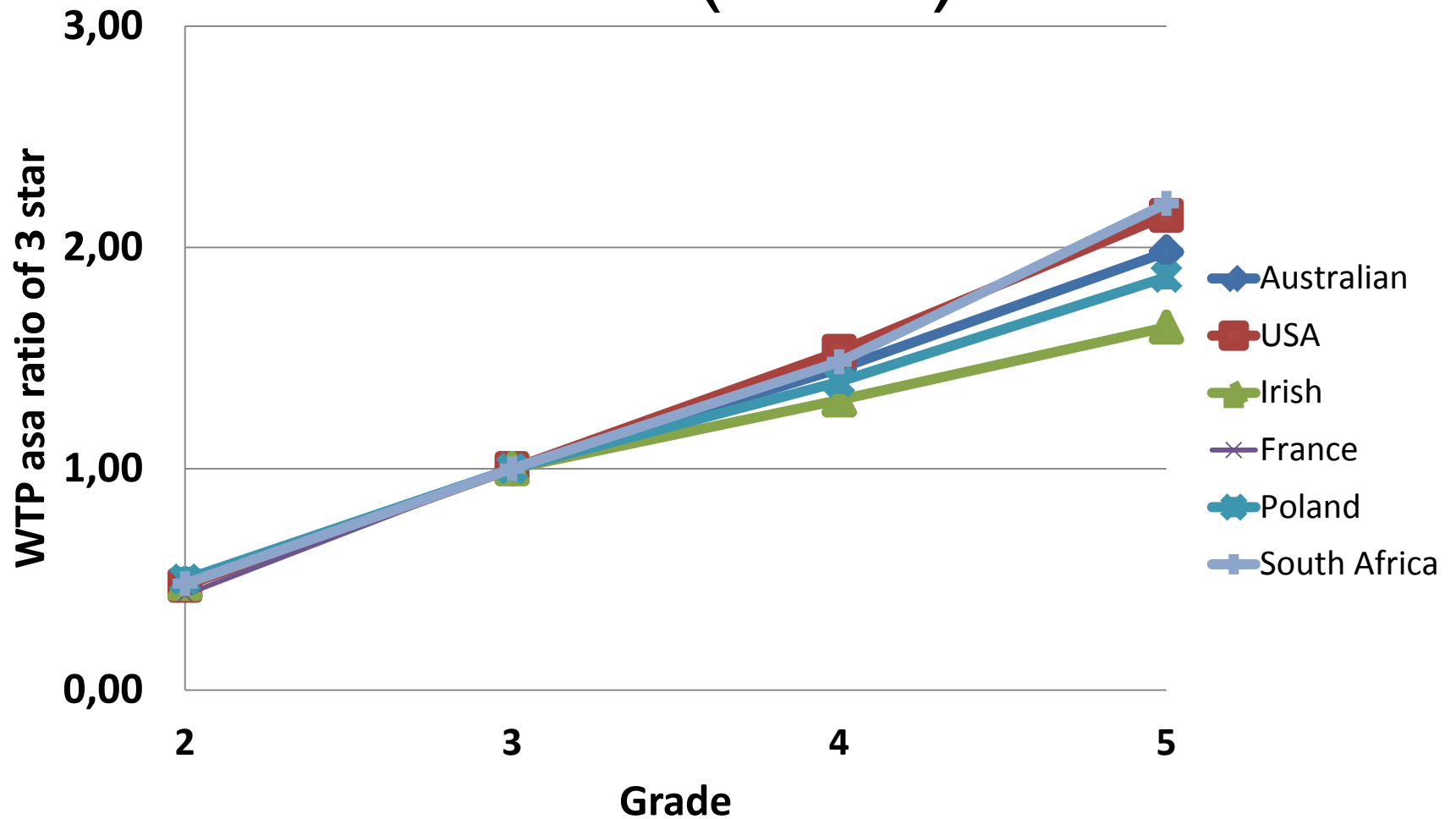


WTP (3*=1)



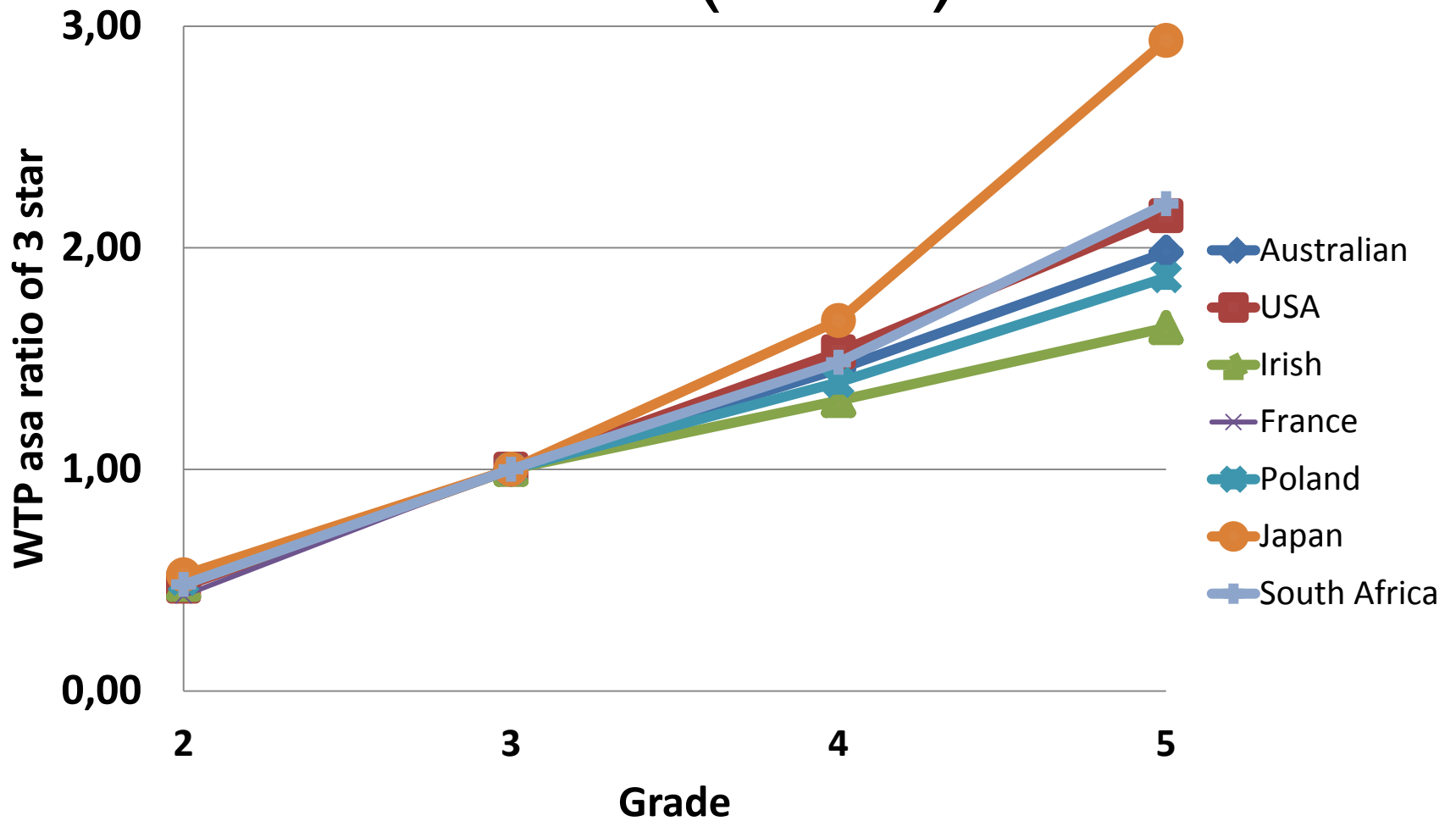


WTP (3*=1)





WTP (3*=1)





MSA – lets use it fully

Grade cuts into 3, 4, 5 star



BONELESS BEEF
PRODUCT OF AUSTRALIA

Just 3*



2193582460120404006850

STRIPLOIN IW/VAC 0-2.7KG MSA
MSA GRILL 3 @ 35 DAYS
GRAIN FED BLACK

PACKED ON 04-APR-12

D-RUMP
IW/VAC

MSA

MB:2+
PRODU

Good 3*

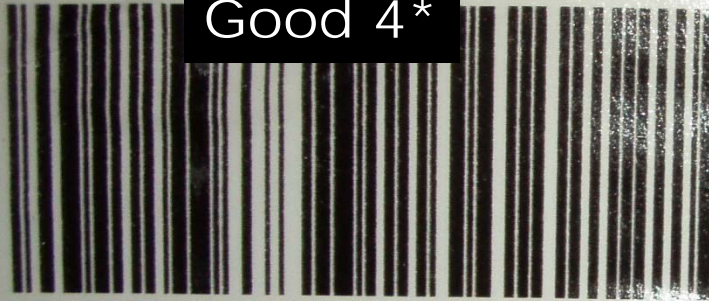


(01)99336660014946(7193)002010(13)110009(21)0000634

MSA 3 Grl @ 5 Days
MSA 3 Rst @ 5 Days
MSA 3 Sfr @ 5 Days
MSA 3 Tsl @ 5 Days
MSA 3 SC @ 5 Days

YG STRIPLOIN MSA
4KG+ IW/VAC
ANGUS BEEF

Good 4*



(01)99336660014946(7193)001990(13)1010

MSA 3 Grl @ 5 Days, MSA 4 @ 35 Days
MSA 3 Rst @ 5 Days, MSA 4 @ 35 Days
MSA 3 Sfr @ 5 Days, MSA 4 @ 28 Days
MSA 3 Tsl @ 5 Days, MSA 4 @ 21 Days

BONELESS BEEF HGP FREE PI

Good 4*



(01)99314985840037(3103)019920(13)111102(

YG CUBE ROLL IW/VAC MSA

GRL MSA 3 at 5 Days, MSA 4 at 14 Days
RST MSA 3 at 5 Days, MSA 4 at 21 Days
SFR MSA 3 at 5 Days, MSA 4 at 21 Days
TSL MSA 3 at 5 Days, MSA 4 at 14 Days

BONELESS BEEF
PRODUCT OF AUSTRALIA



2193582460120404006850

STRIPLOIN IW/VAC 0-2 7KG MSA

MSA GRILL 3 @ 2
GRAIN FED BLA

PACKED O

D-RUMP MSA
IW/VAC
CAPE GRIM

MB:2+
PRODU



0809(21)0000634



**MSA Beef is NOT all
of equal quality!
Confuses consumers**

YG ST
4KG+ IW
PURE SO



(01)99336660014946(3102)001900(13)1010

MSA 3 Grl @ 5 Days, MSA 4 @ 35 Days
MSA 3 Rst @ 5 Days, MSA 4 at 35 Days
MSA 3 Sfr @ 5 Days, MSA 4 @ 28 Days
MSA 3 Tsl @ 5 Days, MSA 4 @ 21 Days

FREE PI




(01)99336660014946(3102)001900(13)111102(

YG CUBE ROLL IW/VAC MSA

GRL MSA 3 at 5 Days, MSA 4 at 14 Days
RST MSA 3 at 5 Days, MSA 4 at 21 Days
SFR MSA 3 at 5 Days, MSA 4 at 21 Days
TSL MSA 3 at 5 Days, MSA 4 at 14 Days

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How much of
this 4 & 5 star
beef exists?



Typical Sth Aust abattior

55,000 carcasses

Cut	Code	Quality	Days age	Cook	Actual %
Tenderloin	TDR062	5*	21	Grill	86.574%
Cube Roll	CUB045	4*	35	Grill	97.635%
Strip Loin	STR045	4*	35	Grill	41.32%
OysterBlade	OYS036	4*	5	Grill	88.478%
Rump Cap	RMP005	4*	21	Grill	68.071%
Rump eye	RMP231	4*	21	Grill	9.857%
Eye of Knuckle	KNU066	4*	28	Roast	49.124%
Rost Biff	RMP131	4*	21	Roast	85.415%
Point End Bisket	BRI057	4*	5	SlowCook	77.894%
Chuck	CHK078	4*	21	SlowCook	99.449%
Topside Cap	TOP033	4*	21	SlowCook	71.502%
HQ Shin	HQShin	4*	5	SlowCook	84.917%
Knuckle Undercut	KNU100	4*	21	StirFry	71.648%
Tri-tip	RMP087	4*	28	StirFry	44.90%
Flank Steak	TFL064	4*	28	StirFry	81.548%

Carcase Sorting (Optimisation)

- Customer requirements
 - Which cuts?
 - What cut x cook combinations?
 - Days aging ?
- How many brands?
 - 3 star vs 4/5 star brands
- Develop customised carcass sorting



Economic Analysis

Is there value in 4 and 5* cuts

Product Description	Brand A (4/5*)	Brand B (3*)	Diff	% HSCW	\$ extra
Tenderloin (5*)	\$30.00	\$22	\$8.00	1.45	\$34.80
Striploin (4*)	\$17.00	\$14	\$3.00	4.4	\$39.60
Cube roll (4*)	\$24.00	\$20	\$4.00	1.9	\$22.80
D Rump (4*)	\$9.50	\$9	\$0.50	3.8	\$5.70
Oyster Blade (4*)	\$6.50	\$5.20	\$1.30	1.8	\$7.02
Chuck Roll (4*)	\$5.80	\$5.10	\$0.70	4.8	\$10.08
				Total	\$120.00

Prices as of 14th December 2011

An extra \$120/head @ 100/week = \$624,000/year



Nest step = MSA Index?

PURPOSE: To provide a standard measure over time of carcass eating quality

- The Index will be used for feedback
- A sound basis for evaluation of on-farm genetic progress & management strategies
- A benchmarking tool for suppliers of cattle



How to build an MSA Index

MSA Grading Model

Carcass inputs

MSA Parameter	Individual Carcase Input
%Bos Indicus	0
Sex	M
HGP	N
Milk Calf	N
Carc Wt	300
Hang	TX
Ossification	150
Marbling	320
Rib Fat	5
Ult pH	5.58
Ult Temp	3
Days Aged	14

cut	muscle	GRL	RST	SFR	TSL	YAK	SSB	SCT	CRN
spinalis	SPN081	79	69	79	75	80			
tenderloin	TDR034	83	77						
tenderloin	TDR062	78	77	80	75	71	67		
tenderloin	TDG062	76							
cube roll	CUB045	66	66	66	66	67			
striploin	STAO45	60	61	62	59	62	54		
striploin	STPO45	58	59	62	58	59	52		
oyster blade	OYS036	68	65	71	72	72			
blade	BLD095			44	49				
blade	BLD096	57	61	63	63	65	50	63	
chucktender	CTR085		51	53	58				62
rump	RMP131	55	64	62	66	61	53	58	
rump	RMP231	58	66	65	65	69			
rump	RMP005	62	67	70	71	73			
rump	RMP032			68	70				
rump	RMP087		56	61	61			59	
knuckle	KNU066	49	63	58	61	60		50	
knuckle	KNU098			57	62			60	
knuckle	KNU099	39	50	47	54	50		55	
knuckle	KNU100			64	67	65		58	
outside flat	OUT005	46	46	49	59	60	47	62	55
outside flat	OUT029			62	69			63	
eye round	EYE075	50	53	51	53	55		54	52
topside	TOP001	43		54	56	61		53	
topside	TOP033	39		56	61	61		63	
topside	TOP073	38	46	46	56	57	48	56	
chuck	CHK068			48	52			65	
chuck	CHK074	60	56	61	67	59		72	
chuck	CHK078	55	57	58	62	58		69	
chuck	CHK081			60	64	60		75	
chuck	CHK082			52	56				
thin-flank	TFLO51			62				62	
thin-flank	TFLO52			70	63			67	
thin-flank	TFLO64			65	61			64	
rib-blade	RIB041			53					
brisket	BRI056			43	57	52		59	37
brisket	BRI057			40	48	48		64	
shin	FQshin							65	
shin	HQshin							68	
intercostal	INT037			57					

X

Muscle proportions

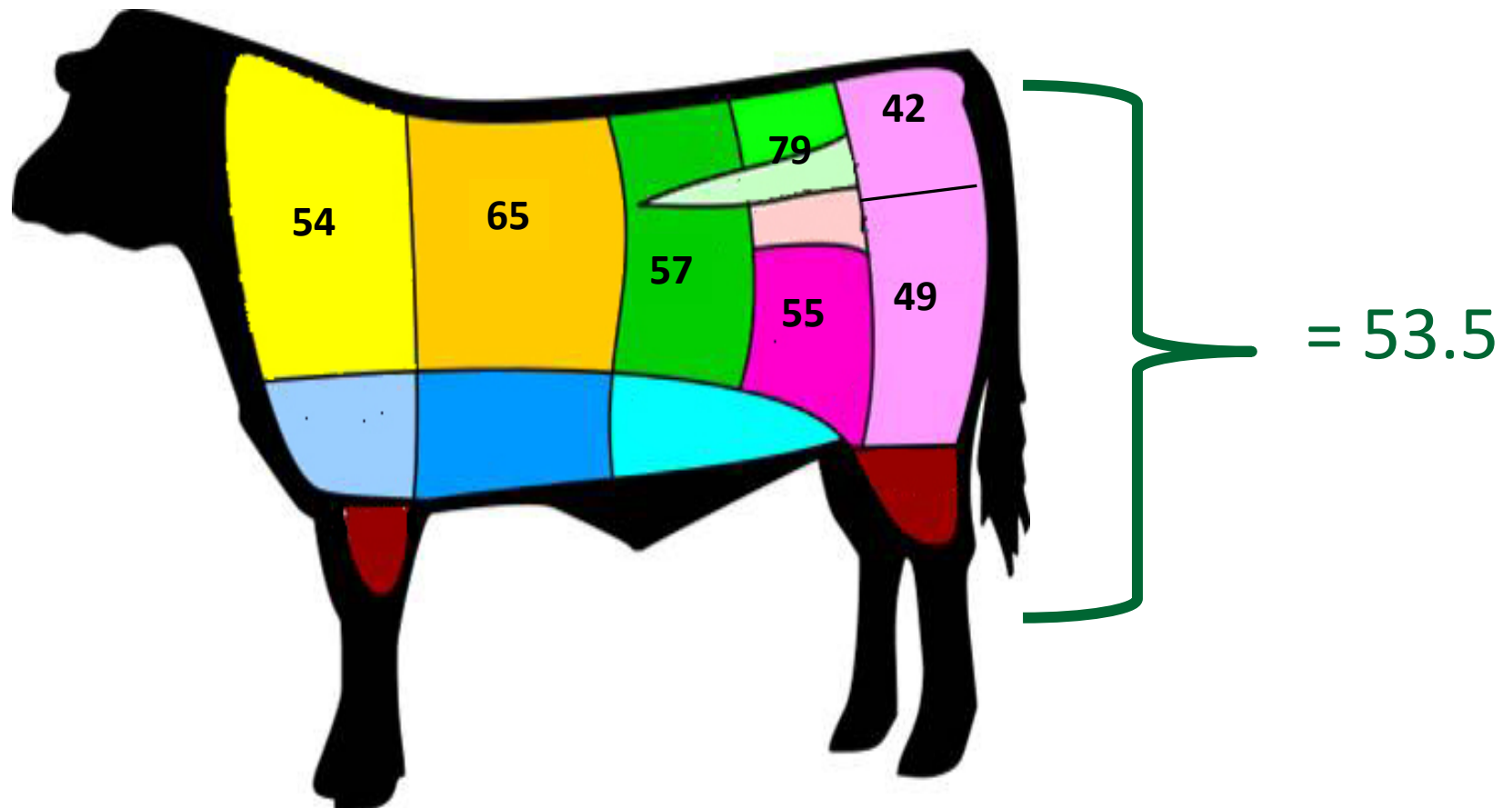
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Sum for all cuts (MSA Quality Index)



What will the index look like?

Index = Muscle eating quality score X % carcase weight





MSA Index

- Use all 40 muscles in the MSA Quality Index
- Use the most common cook method
- Use fixed muscle proportions to calculate a weighted MSA index
- The MSA quality index can be used by industry to monitor changes in whole carcass quality

NB: Hang fixed



True value of the carcase

$$\begin{array}{l} \text{Carcase} \\ \text{value} \\ (\$) \end{array} = \begin{array}{l} \text{Wt retail} \\ \text{cuts (kg)} \end{array} \times \begin{array}{l} \text{Value of the} \\ \text{cuts (\$/kg)} \end{array}$$



Conclusion

MSA is an example of a collaboration between science and industry which has led to implementation of a cuts based grading system

- Consumer has benefited in terms of better quality meat
- Conduit for researchers to implement meat science outcomes
- Platform to develop value based marketing systems
- Industry monetary investment has been returned many fold
- Dynamic system that will continue to evolve

IT DOES TAKE TIME & PASSION - POLITICS MUST BE IGNORED !



Thank you

MSA – beef prediction model

■ Predictors

- Breed (gene markers)
- Gender
- Growth path
 - carcass wt
 - ossification score
 - Milk fed veal
- Marbling
- pHu
- Rib fat
- Hormone growth promotants
- Sale yard
- Aging (e5d)

■ Basic criteria

- Stress minimisation
- Farm \leftrightarrow kill = 36hours

■ Thresholds

- Ultimate pH < 5.7
- Colour < Ausmeat 3
- Rib fat > 3mm