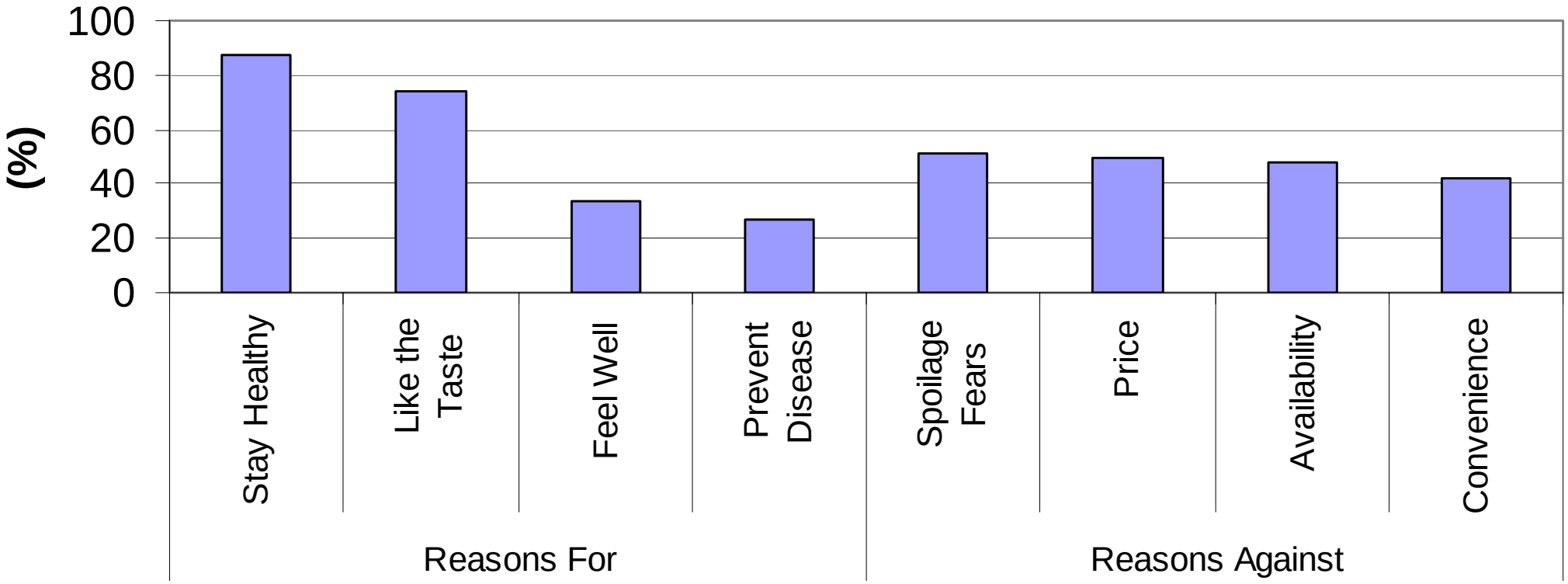
The New Zealand Institute for Plant & Food Research Limited

Consumer preferences and choice of fruit: the role of Avocado quality

Roger Harker

Consumption

Top 4 reasons USA consumers eat and top 4 reasons USA consumers are prevented from eating fruit (n~5000, PBH, 2005).

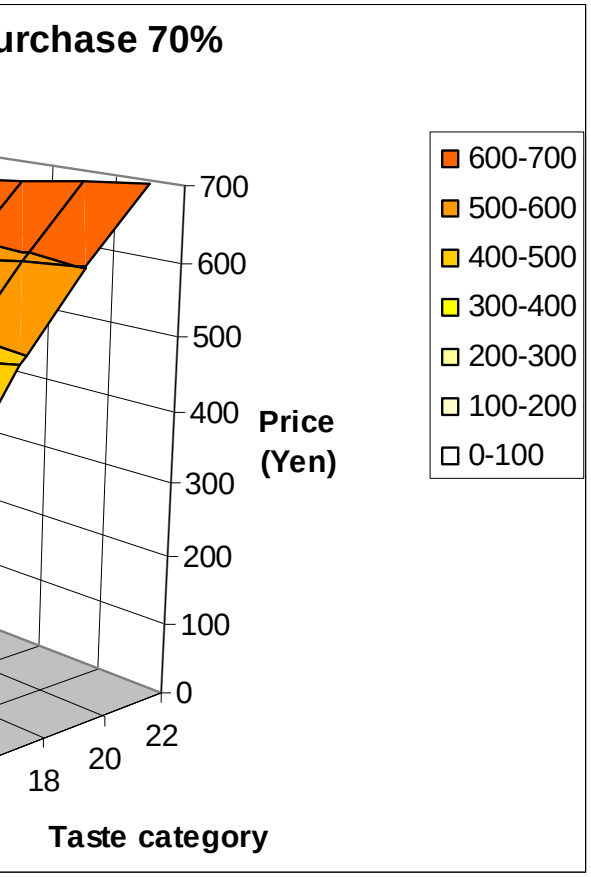


Research on consumer liking for flavour

Quality:
outcomes from laboratory-based studies

- Value of tomatoes (Norway): 14% increase in 1st year and 40% increase in 2nd year.
- Wine (Gallo, USA): 6% increase in value in 1st year.
- All of these occurred without marked change in marketing/promotion (i.e. driven by return sales and word-of mouth).

Measuring consumer liking



Increasing the reality of the situation in laboratory-based studies

NEW APPLES (2 months storage)

From USA

‘Look good but poorer eating quality’

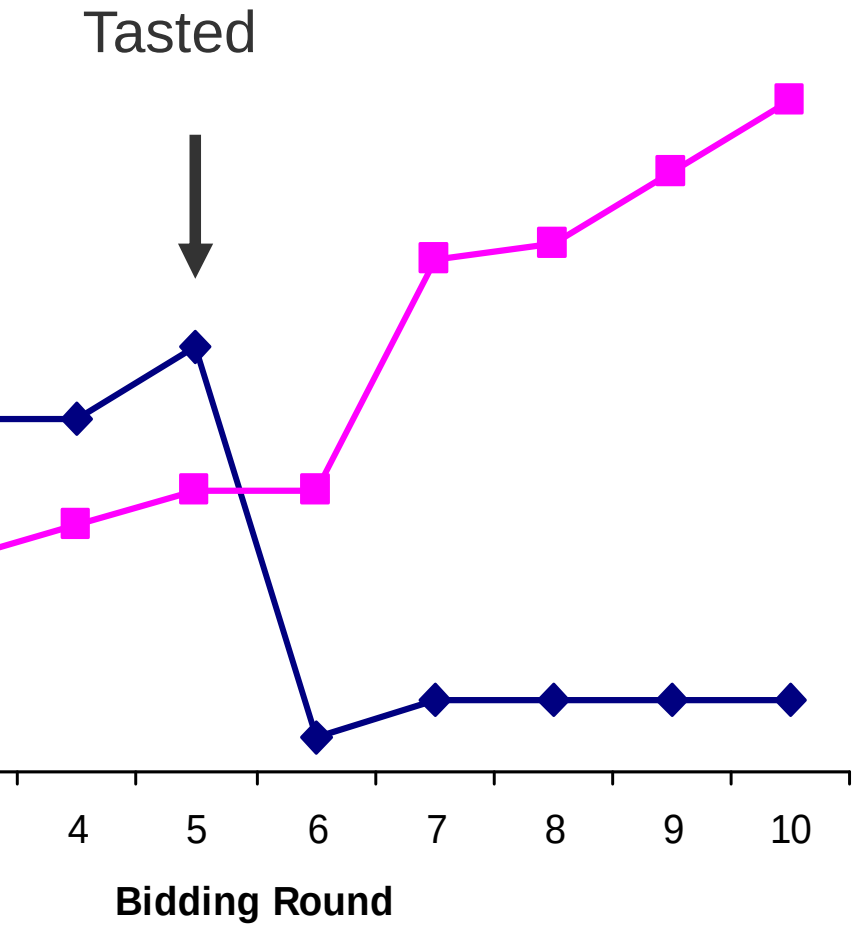
OLD APPLES (8 months storage)

From NZ

‘Look bad but better eating quality’

Deliberately set up a context in which emotional and physical aspects of freshness perception are in opposite directions

Bids before and after tasting for two participants



"Even though I thought that the old apples were nicer in the tasting trial, I still suspect that the new ones would be better overall"

Consumers: flavour and price

- Poor flavour will decrease prices / demand
- Good flavour will increase prices / demand
- Flavour is about twice as important as price when determining consumers willingness to purchase fruit.

Avocado studies

Science Staff

- Peter J. Hofman
- Roberto Marques
- Barbara Stubbings
- Sara R. Jaeger
- Anne White
- Christina Bava
- Michelle Beresford
- Mark Wohlers
- Allan Woolf
- Joanna Gamble

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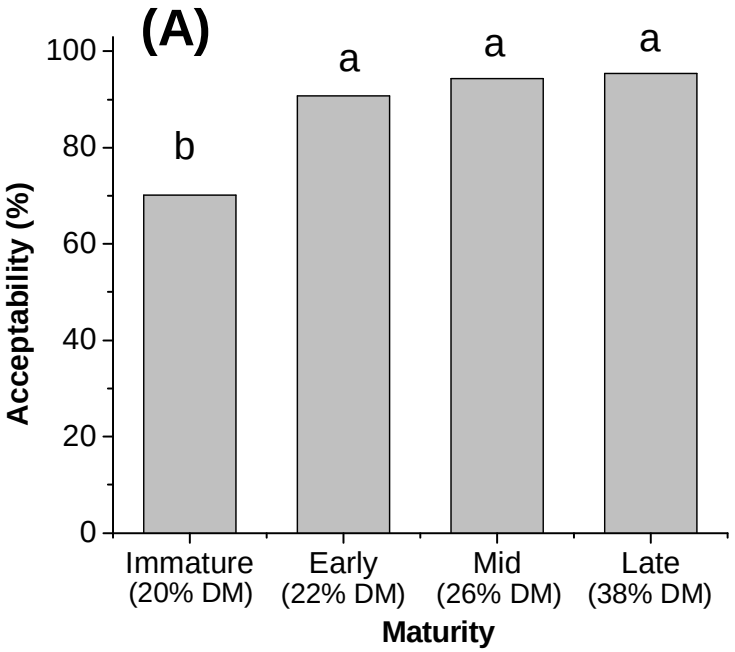
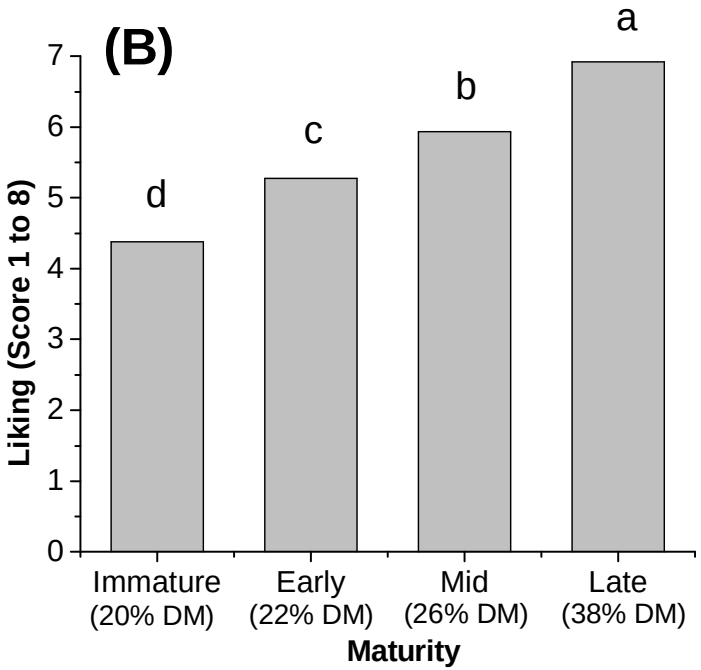
- Online Research Unit
- Avocados Australia Ltd
- Horticulture Australia Ltd

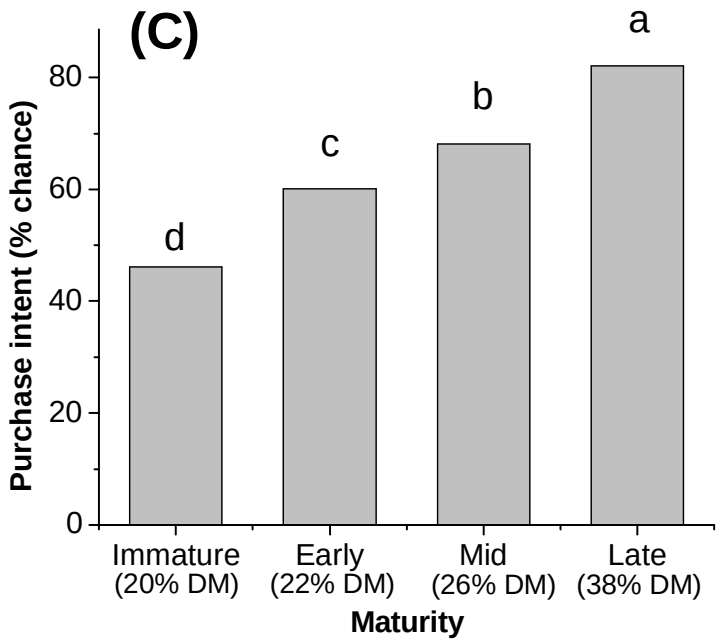
Avocado: consumer tasting

- Effect of maturity (dry matter): 4 DM treatments.
- Effect of ripeness (firmness): 3 firmness treatments.

(107 Consumers)

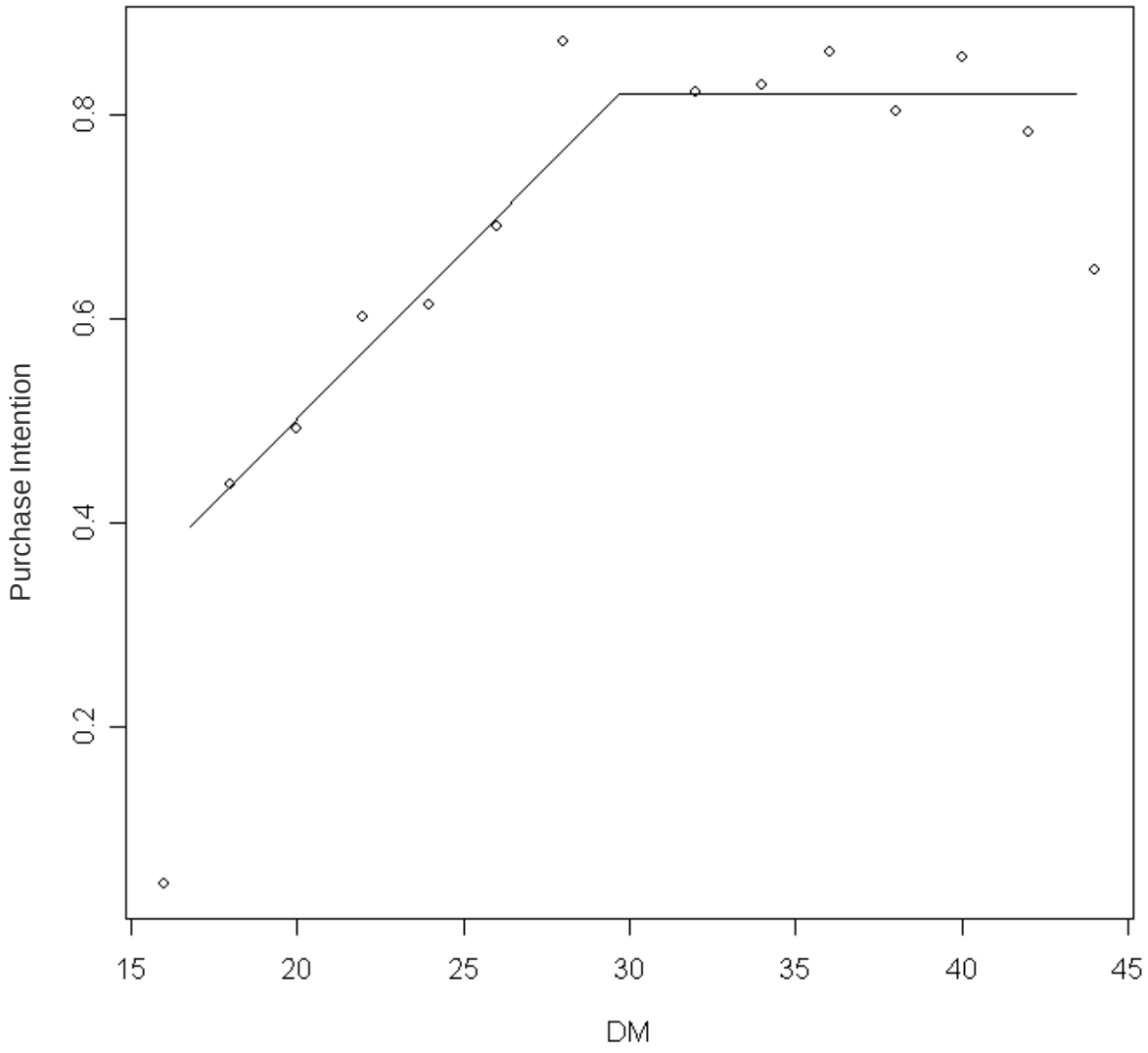

(A)
Acceptability (%)
100
80
60
40
20
0
b
a
a
a
Immature (20% DM)
Early (22% DM)
Mid (26% DM)
Late (38% DM)
Maturity


(B)
Liking (Score 1 to 8)
7
6
5
4
3
2
1
0
d
c
b
a
Immature (20% DM)
Early (22% DM)
Mid (26% DM)
Late (38% DM)
Maturity


(C)
Purchase intent (% chance)
80
60
40
20
0
d
c
b
a
Immature (20% DM)
Early (22% DM)
Mid (26% DM)
Late (38% DM)
Maturity

DM as a continuous variable

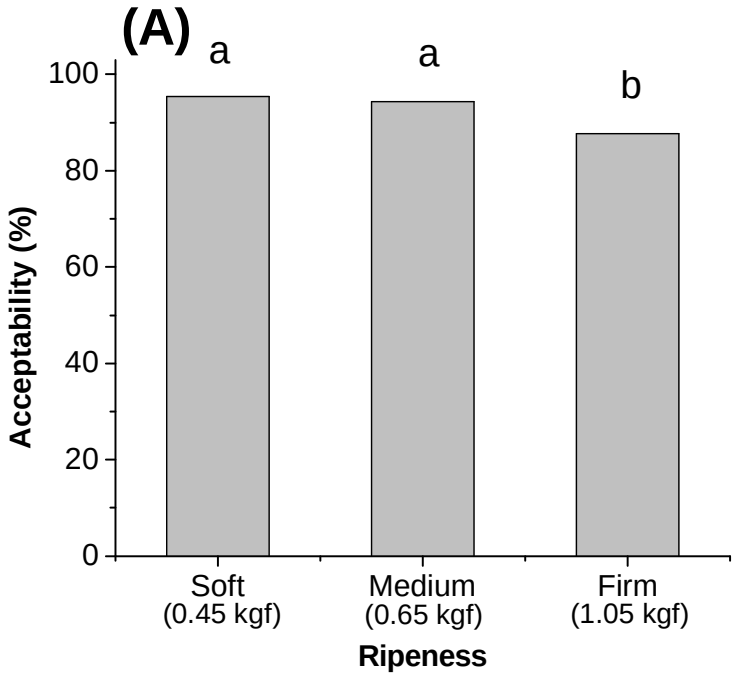
DM vs purchase intention

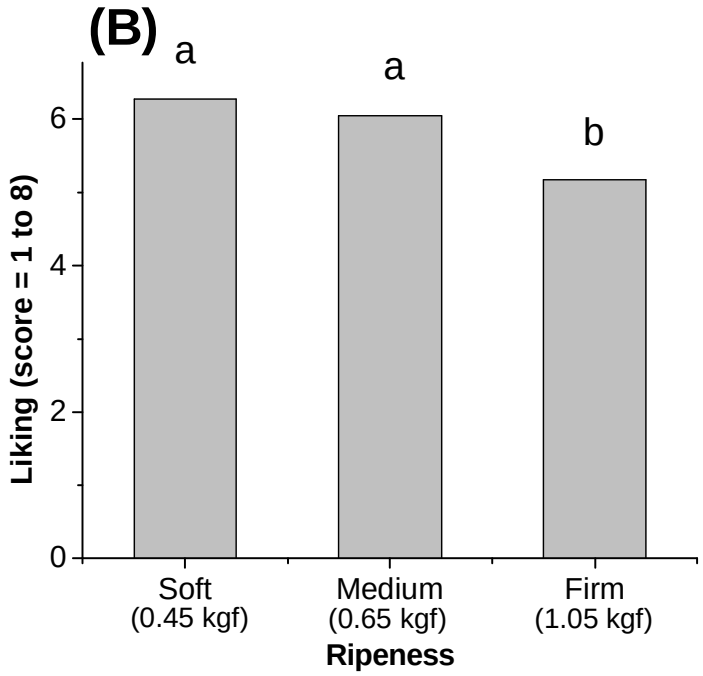


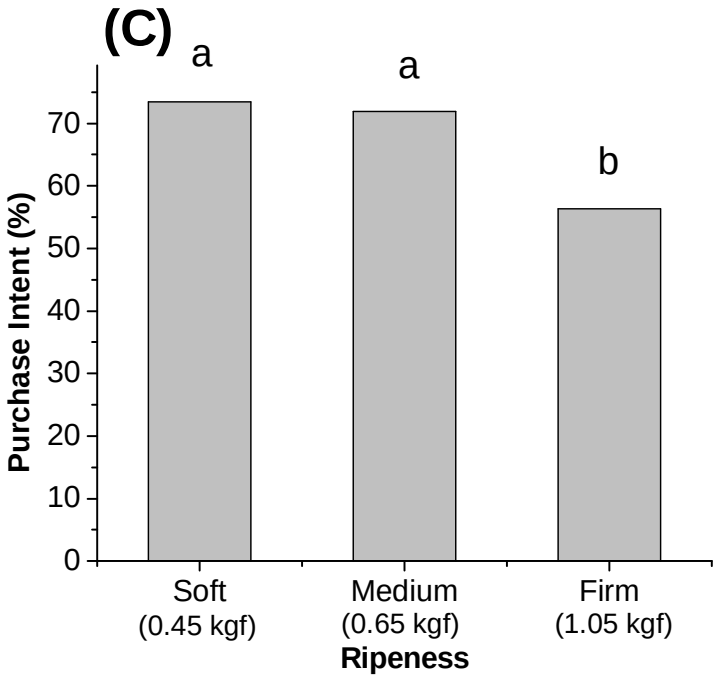
DM summary

- DM levels that are lower than 22% resulted in lower ratings of consumer acceptability.
- Consumer liking and willingness to pay increases with increasing DM.
- Consumer willingness to pay reaches a plateau above which there is no further increase at 28% DM

Consumers: fruit convenience

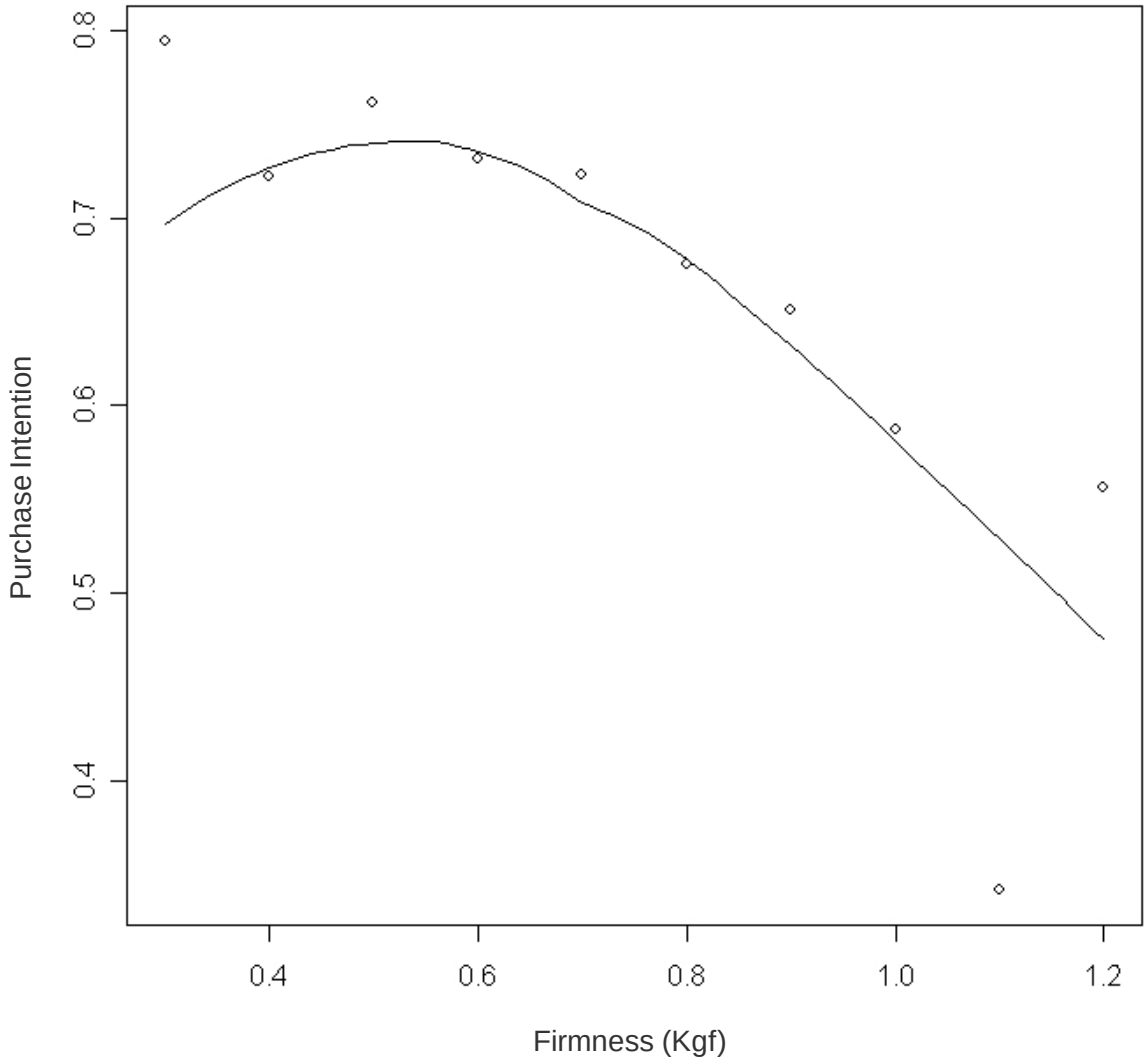

(A)
a
a
b
Acceptability (%)
100
80
60
40
20
0
Soft
(0.45 kgf)
Medium
(0.65 kgf)
Firm
(1.05 kgf)
Ripeness


(B)
a
a
b
Liking (score = 1 to 8)
6
4
2
0
Soft
(0.45 kgf)
Medium
(0.65 kgf)
Firm
(1.05 kgf)
Ripeness


(C)
a
a
b
Purchase Intent (%)
70
60
50
40
30
20
10
0
Soft
(0.45 kgf)
Medium
(0.65 kgf)
Firm
(1.05 kgf)
Ripeness

Firmness as a continuous variable

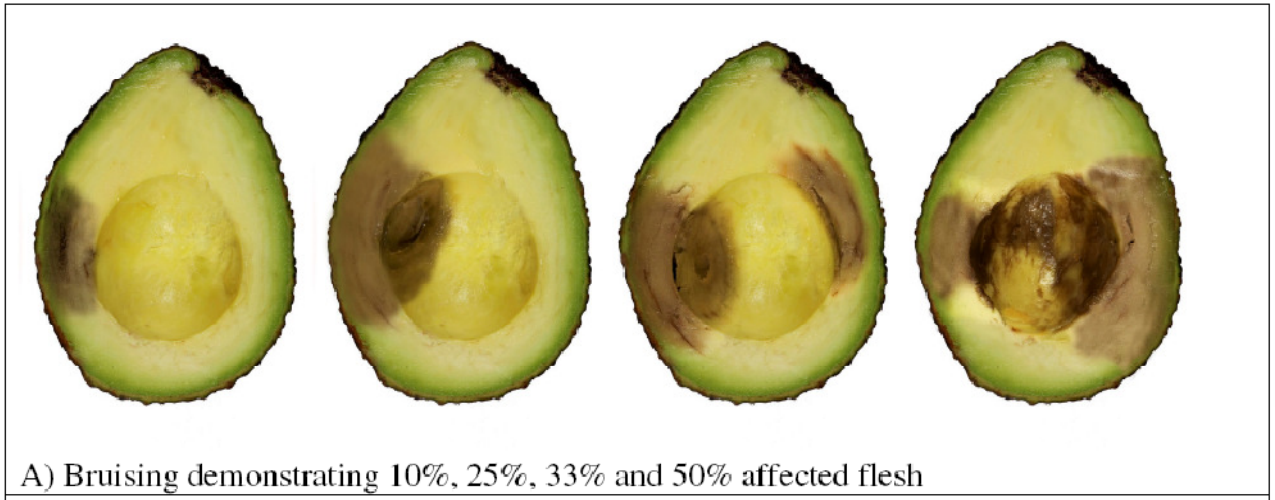
Firmness vs purchase intention



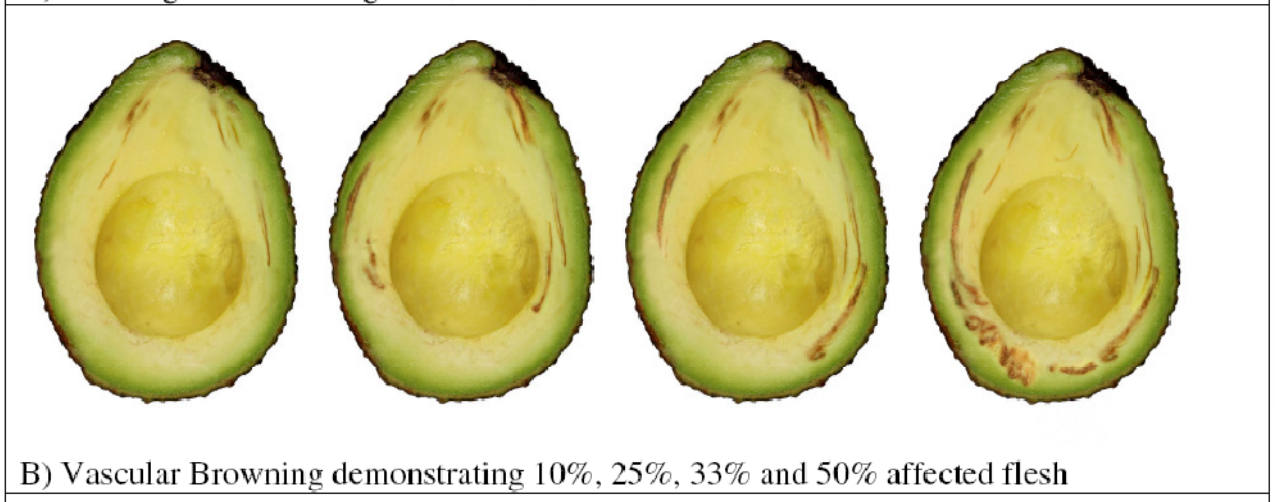
Firmness summary

- The ripeness (firmness) that was preferred by consumers was 0.65 kgf or softer, which relates to a fruit that deforms slightly under moderate hand pressure (firmometer value of 80).

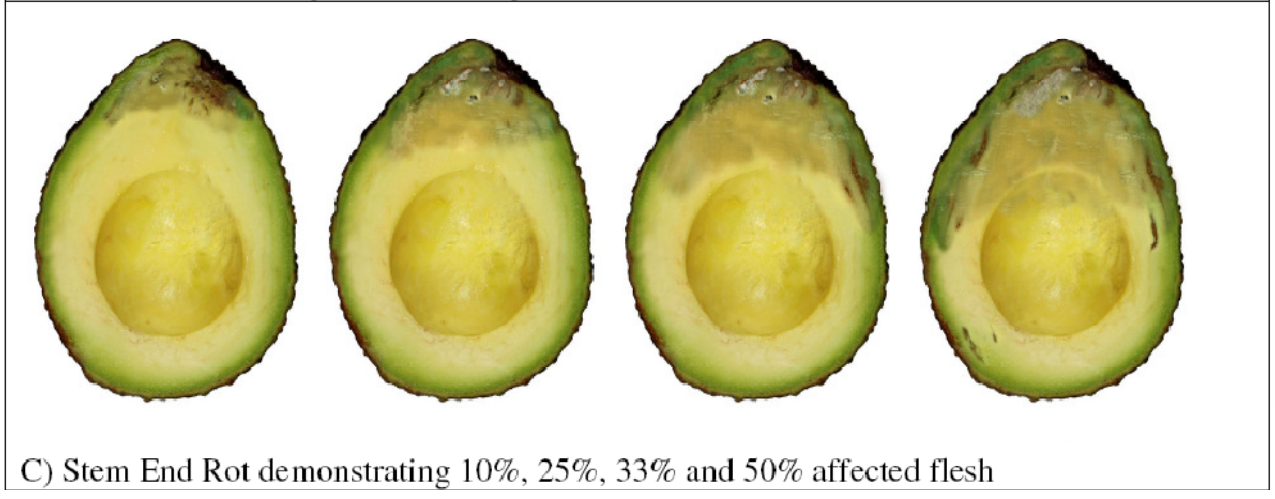
Consumers: responses of fruit spoilage



A) Bruising demonstrating 10%, 25%, 33% and 50% affected flesh



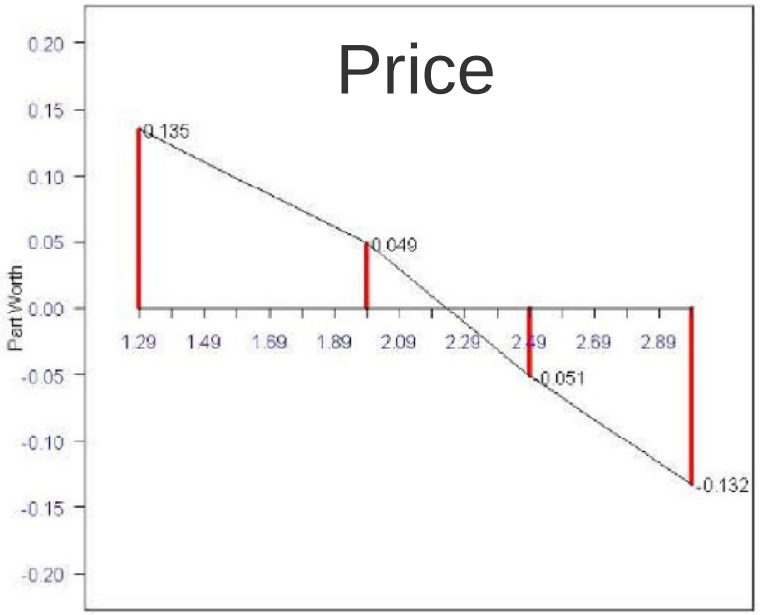
B) Vascular Browning demonstrating 10%, 25%, 33% and 50% affected flesh

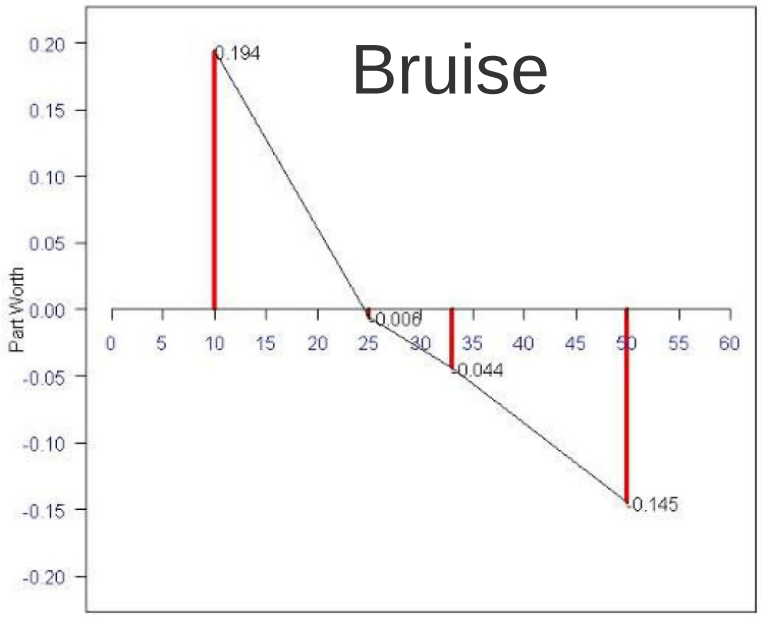


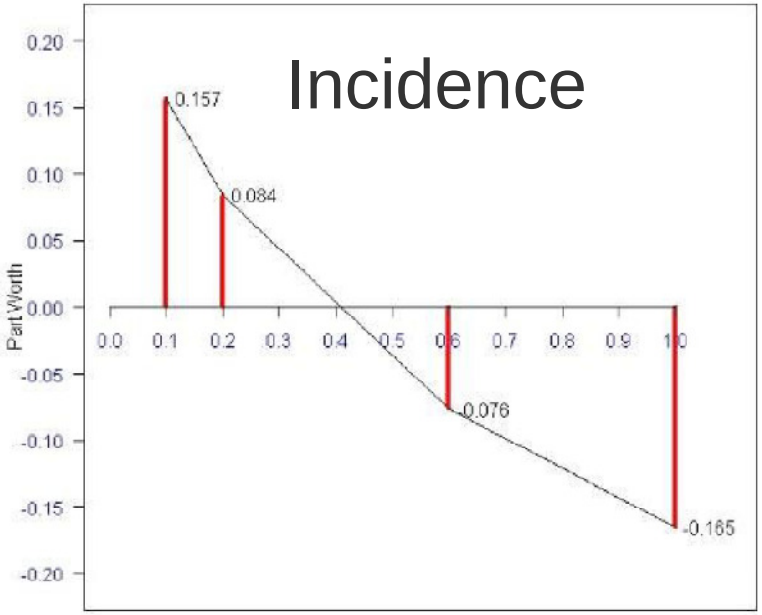
C) Stem End Rot demonstrating 10%, 25%, 33% and 50% affected flesh

Treatments

Factor	Level 1	Level 2	Level 3	Level 4
Price per Avocado	$0.89	$1.39	$1.99	$2.49
Level of Defect (% flesh affected)	10% damage	25% damage	33% damage	50% damage
Incidence of Defect	Very infrequent (1 in 10 fruit)	Infrequent (1 in 5 fruit)	Quite frequent (3 in 5 fruit)	Persistent (5 in 5 fruit)







Relative importance:

- Bruise = 42.0%
- Price = 32.7%
- Incidence = 25.3%
  (online study, n=422)

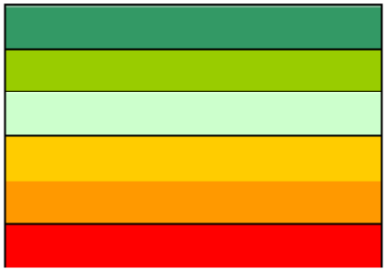
Purchase intentions: influence of damage

Bruising

A. Bruising		Incidence			
Price	Severity	1 in 10	1 in 5	3 in 5	5 in 5
0.89	10%	0.74	0.71	0.58	0.55
	25%	0.60	0.57	0.44	0.42
	33%	0.52	0.50	0.37	0.34
	50%	0.40	0.37	0.24	0.21
1.39	10%	0.64	0.59	0.50	0.46
	25%	0.47	0.42	0.33	0.28
	33%	0.45	0.40	0.30	0.26
	50%	0.35	0.30	0.21	0.16
1.99	10%	0.57	0.55	0.44	0.40
	25%	0.43	0.41	0.30	0.26
	33%	0.37	0.35	0.24	0.20
	50%	0.29	0.28	0.17	0.13
2.49	10%	0.45	0.40	0.34	0.32
	25%	0.33	0.28	0.22	0.19
	33%	0.29	0.24	0.18	0.15
	50%	0.24	0.19	0.13	0.10

Vascular Browning

Vascular Browning		Incidence			
Price	Severity	1 in 10	1 in 5	3 in 5	5 in 5
0.89	10%	0.85	0.84	0.79	0.74
	25%	0.72	0.71	0.66	0.61
	33%	0.69	0.68	0.63	0.58
	50%	0.48	0.47	0.42	0.37
1.39	10%	0.77	0.73	0.67	0.65
	25%	0.63	0.59	0.53	0.51
	33%	0.59	0.55	0.49	0.47
	50%	0.41	0.37	0.31	0.29
1.99	10%	0.69	0.66	0.58	0.54
	25%	0.56	0.52	0.45	0.40
	33%	0.52	0.49	0.41	0.37
	50%	0.37	0.33	0.26	0.21
2.49	10%	0.55	0.53	0.47	0.43
	25%	0.42	0.40	0.34	0.30
	33%	0.40	0.37	0.31	0.27
	50%	0.29	0.27	0.21	0.17



definitely will buy (90-100% chance)
probably will buy (70-89% chance)
possibly will buy (50-69% chance)
possibly will not buy (30-49% chance)
probably will not buy (10-29% chance)
definitely will not buy (less than 10% chance)

Internal damage summary

- The three experimental factors; price, severity of defect and incidence of affected fruit significantly influenced consumers' future purchase intentions.
- Severity of defect had the highest relative importance followed by price, then the incidence of affected fruit.

Recommendations

- The study indicates that maturity standards be set above 22% DM but no higher than 28% DM.

- Efforts to mimimise the severity of internal defects be considered most important to maximise future purchase intentions of avocado consumers.

The New Zealand Institute for Plant & Food Research Limited

rharker@hortresearch.co.nz