



Know-how for Horticulture™

Fresh Produce Retail Service - Potatoes

Gina Cowart
Horticulture Australia
Limited

Project Number: PT02041

PT02041

This report is published by Horticulture Australia Ltd to pass on information concerning horticultural research and development undertaken for the potato industry.

The research contained in this report was funded by Horticulture Australia Ltd with the financial support of the potato industry.

All expressions of opinion are not to be regarded as expressing the opinion of Horticulture Australia Ltd or any authority of the Australian Government.

The Company and the Australian Government accept no responsibility for any of the opinions or the accuracy of the information contained in this report and readers should rely upon their own enquiries in making decisions concerning their own interests.

ISBN 0 7341 0727 7

Published and distributed by:

Horticultural Australia Ltd

Level 1

50 Carrington Street

Sydney NSW 2000

Telephone: (02) 8295 2300

Fax: (02) 8295 2399

E-Mail: horticulture@horticulture.com.au

© Copyright 2003



Fresh Potato Program

2002- 2003

HAL Project PT02041

IMPORTANT NOTE

This report contains sensitive information relating to key retailing groups in Queensland, New South Wales, Victoria, South Australia and Western Australia.

Due to its sensitive, comparative, and confidential nature, it is designed for internal use **only**. It is not designed for disclosure to any retailers as it may not be an accurate measure of a groups' overall performance, but simply a snapshot of the few stores by which they were represented over the period.

It does however provide the Fresh Potato Industry and HAL with some very useful insights, trends and a starting point from which to build.

HAL Project Number PT02041

Program/Project Leader Gina Cowart

Purpose of Report To provide benchmarking data on the quality and handling procedures of fresh potatoes at retail for project PT02015, Supply chain-handling systems for premium potatoes.

Acknowledgment We would like to acknowledge the Fresh Potato Industry and Adrian Dahlenburg for providing HAL with the opportunity to deliver its retail services to them.

All expressions of opinions are not to be regarded as expressing the opinion of the Horticulture Australia. The Company accepts no responsibility for any of the opinions or the accuracy of the information contained in this report and readers should rely upon their own inquiries in making decisions concerning their own interests.

Date of the Report August 2003

TABLE OF CONTENTS

	Page
Media Summary	
a. Key components of the project	5
b. Industry significance of the project	5
c. Time & Event Schedule	6
Conclusions/ Recommendation	6
The FPRS Fresh Potato Program	
a. Introduction	8
b. Method & Materials	8
Quantitative Results	11
Survey Form	Appendix A
Potato Retail Survey Guide	Appendix B
Get Fresh! Tips	Appendix C

MEDIA SUMMARY

Key Components of the Project

1. To collect quality and handling information of fresh potatoes at retail.
2. To educate retail staff on correct handling, storage, and display practices recommended by Fresh Potato Industry.
3. To educate retail staff (and through them to consumers) the variances in product characteristics.

The FPRS Potato Program was initiated to assist Adrian Dahlenburg in benchmarking the quality of potatoes at retail relating to mechanical damage, storage and handling practices of retail staff. The information gathered in this project will be reviewed with other supply chain data gathered in project PT02015 to provide new technology recommendations for supply chain handling and packaging for fresh market potatoes. These recommendations will be communicated to industry via publications and a series of national seminars.

The national retail support program involved approximately 1000 stores over the two cycle campaign and included a cross section of Woolworths, Coles, Franklins, Independent supermarkets and specialist fruit retailers. The Retail Development Officers (RDOs) conducted store visits to collect information, communicate several key messages (as set in the objectives of each month), and distributed *Get Fresh!* Tips.

Industry Significance of the Project

- A bank of data and qualitative information which will be used in project PT02015
- Qualitative observations and recommendations by RDOs
- Increased knowledge of fresh produce retail staff in regard to fresh potatoes, their characteristics and varieties
- Improved product storage and handling at the retail level
- Improved quality of product on display
- Increased profile of fresh potatoes in retail outlets
- Better quality fresh potatoes available to the consumer

Time & Event Schedule

	Program Timetable	
Cycle	Date	Activity
1	November/ December	Store Visits
		Get Fresh! Tips
		Monthly Report
2	February	Store Visits
		Get Fresh! Tips
		Monthly Report

CONCLUSIONS & RECOMMENDATIONS

The recommendations and conclusions included in this report are from RDO observations and discussions with retail staff and consumers in-store.

- Nearly all stores check fresh potato product quality only when product is being put out on display and not when product is received.
- Most stores are aware of greening and try to shut off lights over the display at night or cover stock up at night with rubber mats, but this doesn't always occur due to staff shortage or disinterest. Some stores however only cover product on retail display. Some stores have taken out bulbs above the display but potato displays are still getting light from surrounding fittings.
- Condensation and dampness were a large issue due to high outside temperature. In this instance, some stores were storing fresh washed potatoes in refrigeration. Industry could encourage new research into developing larger weight bags that minimise moisture content for washed and unwashed potatoes.
- Many stores display improper signage with the variety. This is due to lack of product knowledge or inadequate amount of staff in the fresh produce department. Retail staff education on potato varieties and usage and easy-to-move point of sale is recommended.
- Handlers of product need to be educated that potatoes are not a "hard line" and should be treated with care to prevent bruising and damage. It is recommended that this message be printed on packaging.
- It was difficult to locate Packed On and Use By dates on packaging. A standard could be set by industry for Packed On dates. There was a

problem with pre-packs coming in close to Use By Date, which means product only has a couple of days at normal price.

- There were many instances where product was still good eating quality beyond Use By date.
- A large portion of independents pack their own pre-pack potatoes which did not have Use By date, uses or nutritional information.
- There was positive feedback on the purple 2kg bags because this was seen to adequately block light and prevent greening and breakdown.
- The use of black plastic bags for transport, especially for washed potatoes, was seen as effective in slowing greening.
- Some stores have difficulty in keeping bags face up to block light due to customer handling.
- Consumers have the perception that sub-standard quality and damaged potatoes get packaged into opaque pre-packs. Messages should be conveyed to consumer to counteract this perception and improved packing practices could be implemented and promoted at retail.
- There were instances where stores promote a loose variety, but the large bagged product seems to suffer since it doesn't move as quickly and product breaks down. This needs to be managed by planning for specials through purchasing strategy.
- Wider displays with single layers prevent substantial damage of product and allow for easier rotation.

THE FPRS FRESH POTATO PROGRAM

Introduction

From Cycle1 – Cycle2, Horticulture Australia ran a Fresh Produce Retail Service Program for the Fresh Potato Industry nationally. The RDOs visited approximately 1000 stores over the two cycle campaign.

On each store visit the RDO would meet with the Fresh Produce Manager and his/her staff to discuss and assess the main quality and merchandising issues associated with fresh market potatoes.

The aims of the program were:

- ◆ Establish a databank on the quality, storage and handling of fresh potatoes in retail stores.
- ◆ Improve the merchandising, handling, rotation, storage and buying strategies for fresh potatoes at retail level.
- ◆ Build upon the existing relationships with retailers.
- ◆ Establish quality feedback in regard to all retail-related issues.
- ◆ Provide timely reporting of all issues.

Method & Material

There were 7 (RDOs) carrying out the work in the metropolitan and surrounding areas in Queensland, New South Wales, Victoria, South Australia and Western Australia. These representatives are experienced fresh produce specialists who are employed by HAL on a part-time basis and come from horticultural, marketing and merchandising backgrounds. This national retail support program involved a cross section of Woolworths, Coles, Franklins, Action, Independent supermarkets and specialist fruit retailers.

During each month's visit, the RDOs executed the following objectives:

- ◆ Analysis of fresh potatoes on display
- ◆ Imparting product knowledge (via face to face visit and the Get Fresh! Tips that were left behind with each Produce Manager).
- ◆ Developing relationships with the Fresh Produce Manager and staff on behalf of the fresh potato industry

Analysis of fresh potatoes on display

This was done by doing a test sample selection by evaluating 2-3 different lines in each store depending on store size. Test samples were targeted in the following priority:

- ◆ High sales volume lines
- ◆ Washed and brushed pre-packs
- ◆ Loose washed

RDOs avoided sampling the same variety and types in the one store presented in different ways, i.e. loose vs pre-packed 2.5kg vs 5 kg pre-packs.

In loose varieties, a sample size of 10 tubers was randomly selected from all depths and areas of the display to ensure an even representation of the display. In packaged varieties, the RDOs randomly selected a single bag and selected a sample size of 10 potatoes from that bag. Once the potato selection occurred, a scoring sheet was completed for each sample.

The product analysis involved the RDOs recording information on the following criteria:

- Produce Manager availability
- Product Reveal
- Product storage
- Packed or loose
- Price
- Bag type (if applicable)
- Packer information (when available)
- Best by/Use by date (when available)
- Display information
- Sprouting
- Skinning
- Texture
- Surface Defects/Damage
- Rot
- Condensation & Dampness
- Brightness

A training session was held in Sydney by Adrian Dahlenburg with the RDOs to impart product knowledge on the potato varieties and forms of defects and damage seen in retail stores. A training guide was provided by Mr. Dahlenburg and product samples were reviewed. Store visits were made by the group to trial the surveys and test calibration amongst the RDOs. The RDOs involved were Christine Tierney (QLD), Benjamin Webb and Joe Calarco (NSW), Rose Christmass and Karen Peterson (VIC), Ivana Fedele (SA) and Fiona Houston (WA).

At the end of the cycle, survey forms were tabulated for quantitative results and a teleconference was held at the end of each cycle to report findings from RDO observations made in-store.

Imparting product knowledge

Get Fresh! Tips were designed by FPRS Manager with consultation from the potato industry and distributed by the RDOs to fresh produce staff and managers. Because retail staff do not receive much product training, the Get Fresh! are popular items and help strengthen support for the product.

Get Fresh! Topics – November/ December 02, Cycle 1

- Check quality on arrival
- Regrade any bags that dropped or damaged
- Ensure good inventory & rotation – first in, first out
- Storage
- Handling potatoes
- Greening
- What to do when a rotten potato is found in a bag

Get Fresh! Topics – February 03, Cycle 2

- Types of mechanical damage
- What consumers want
- Potato characteristics (variety, physical description, strengths, end use)
- Healthy potatoes

The RDOs reinforced these messages with face to face discussions with produce staff.

Developing relationships with the Fresh Produce Manager and staff

Providing product support to retail staff helps to strengthen relations between retail and industry. It assists in bridging the gap along the supply chain. When issues arise in-store, the RDOs encourage retail staff to contact their buyer, or retail staff contact store/ area managers in an attempt to rectify or praise actions seen in store. RDOs are also able to report problems back to industry which may relate to a particular supplier. These are all actions taken to ensure the consumer will have a favourable and flavourable eating experience with the product a repeat purchase.

The WA RDO was in contact with the WA Marketing Board to assist in their retail support and provide feedback on observations seen in store.

The FPRS Manager contacted Mauratis and Costas to notify them of the FPRS and supply chain projects to ensure all stakeholders were informed.

QUANTITATIVE RESULTS

Time Periods

Period	Week 1	Week 2	Week 3	Week 4
Cycle 01	18-24 Nov	25 Nov-1 Dec	2-8 Dec	9-15 Dec
Cycle 02	3-9 Feb	10-16 Feb	17-23 Feb	24 Feb-2 Mar

Number of Stores Visited by State

(e.g. 148 stores were visited in NSW in Cycle 1)

Period	NSW	QLD	SA	VIC	WA	Total
Cycle 01	128	79	67	134	64	472
Cycle 02	125	77	66	129	58	455
National	253	156	133	263	122	927

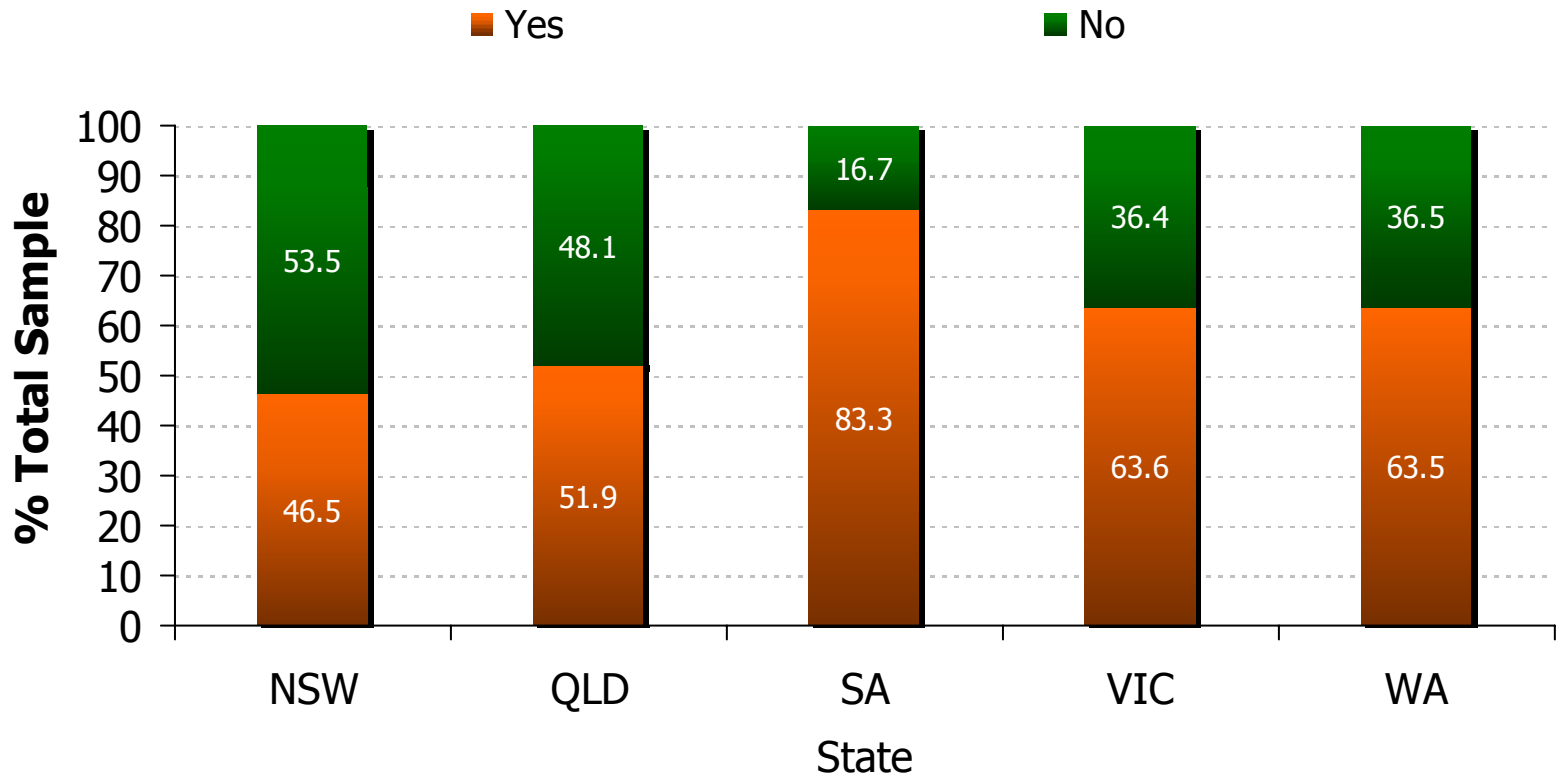
All data collected in store was processed by Market Pulse and reports were also generated by Market Pulse. Raw data was provided in electronic format to Adrian Dahlenburg for further analysis. To receive a copy of the raw data, please email Gina Cowart at gina.cowart@horticulture.com.au.

HAL Potato Report

December 2002

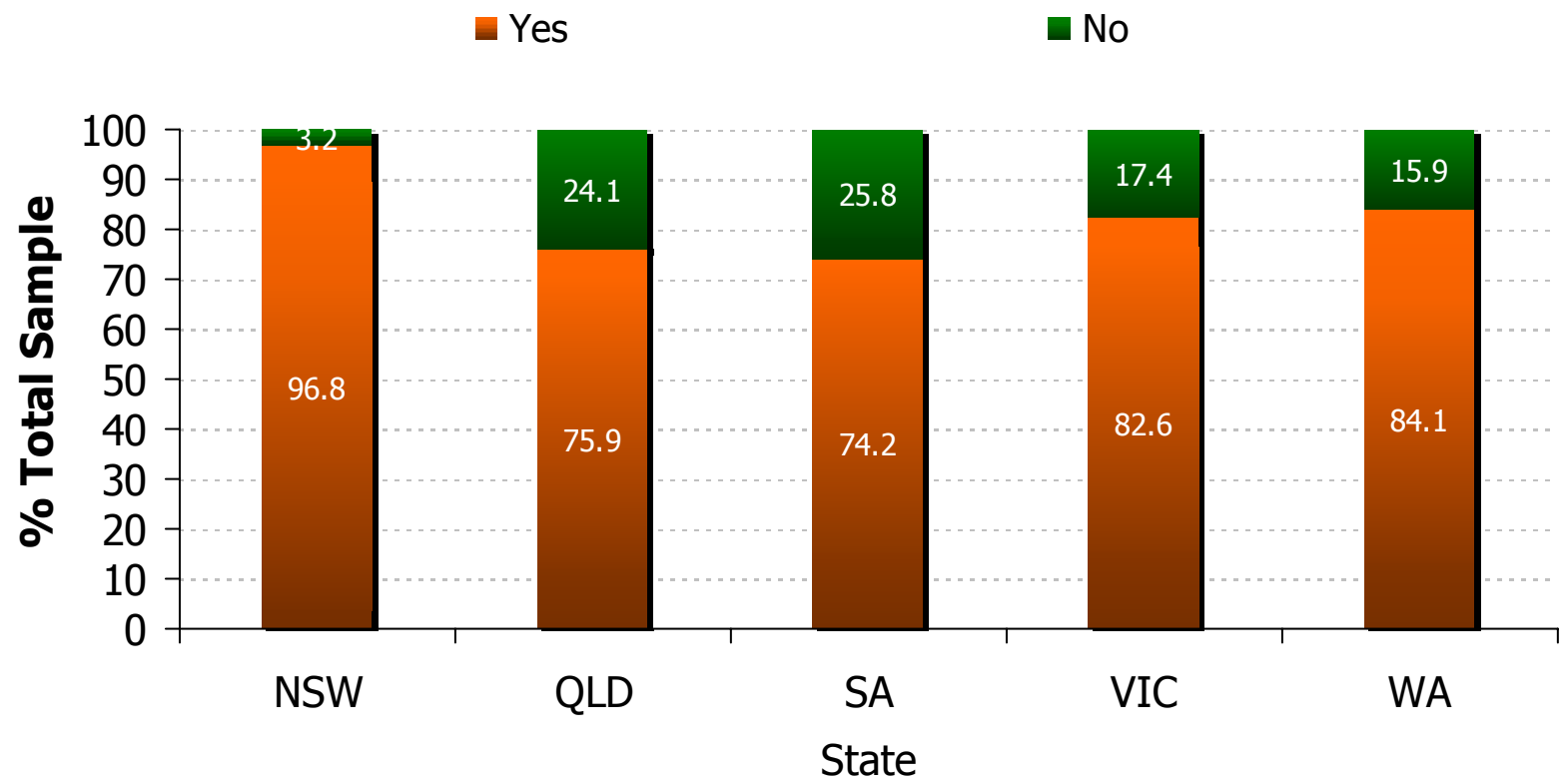
Product Manager Available

By State



Other Staff Available

By State

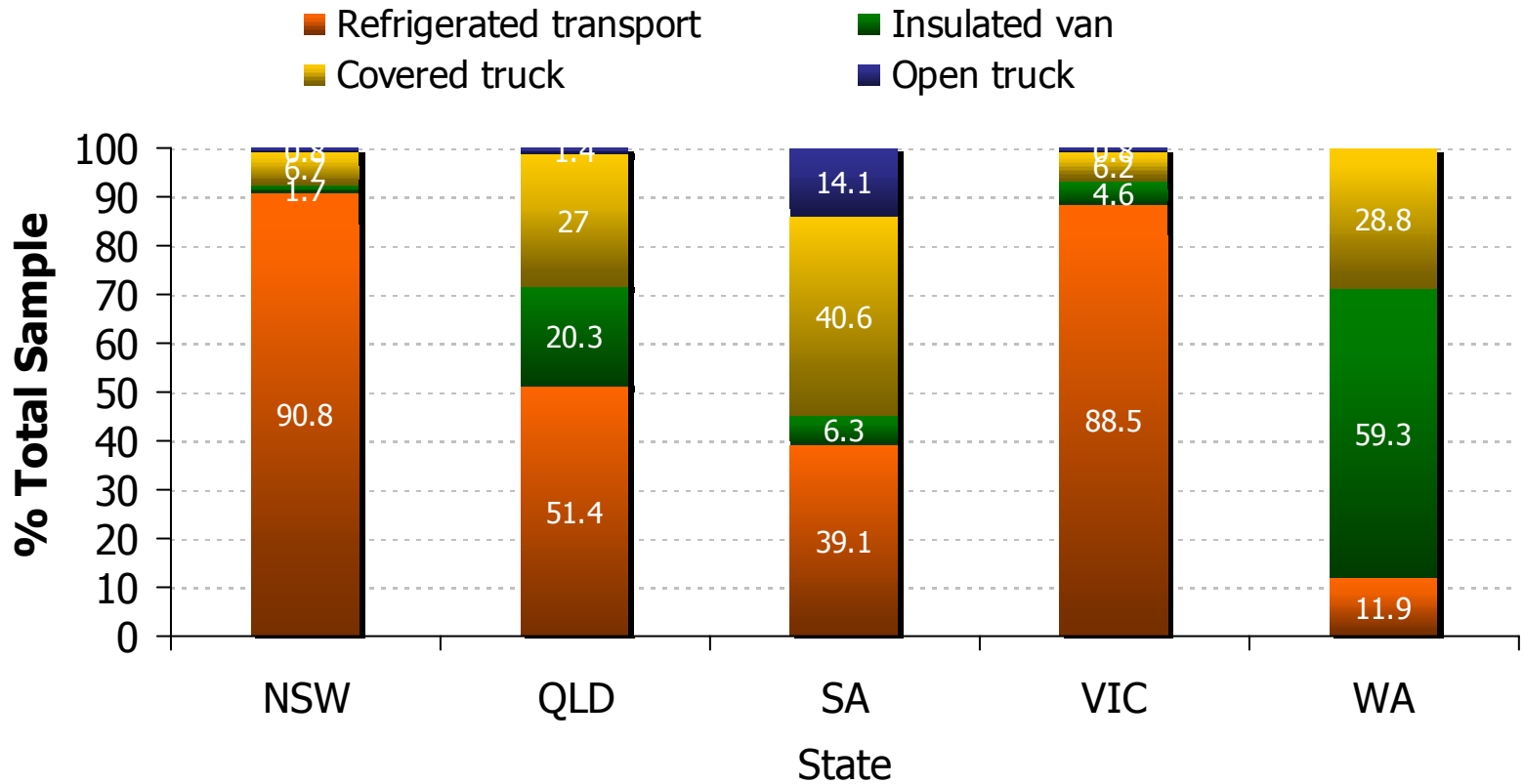


- Store Handling
- State
- Style / Pack

Store Handling

Receival of Potatoes (vehicle)

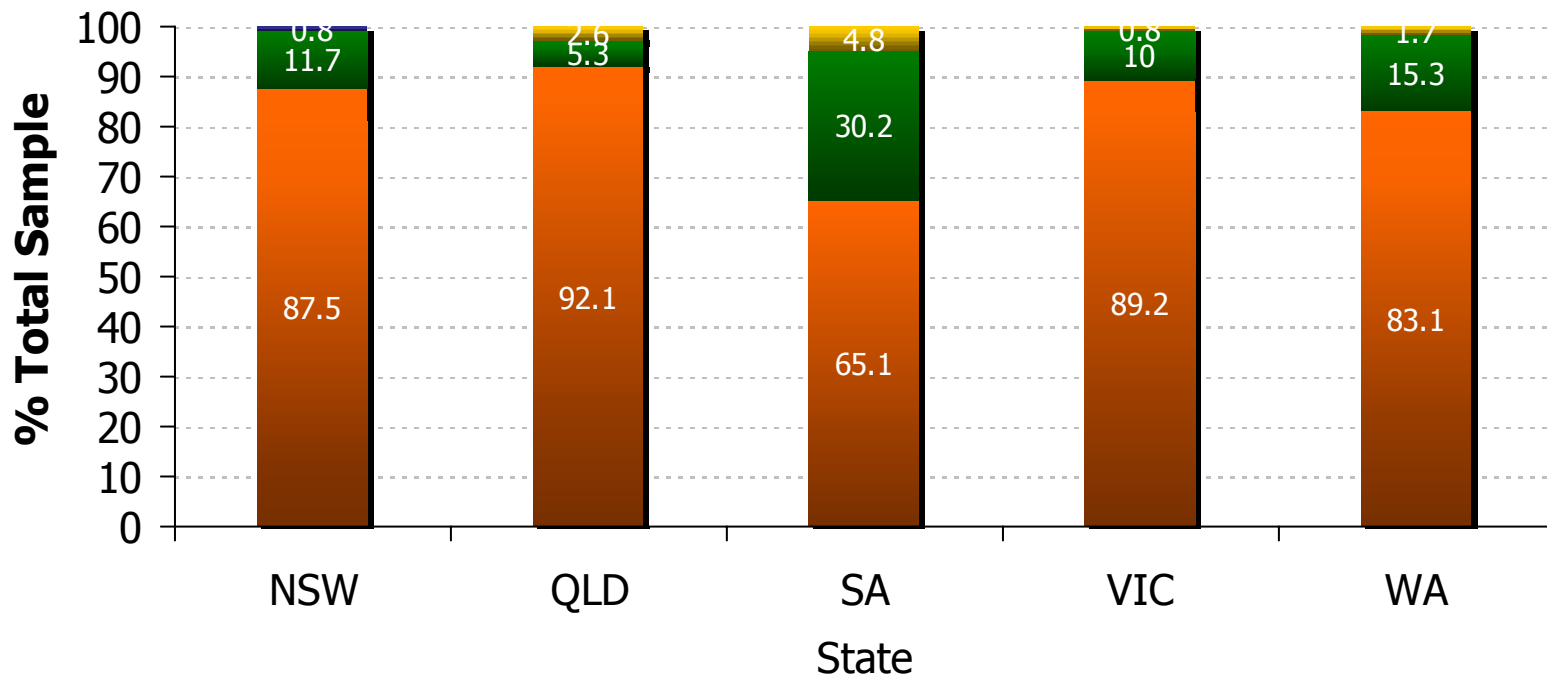
By State



Receival of Potatoes

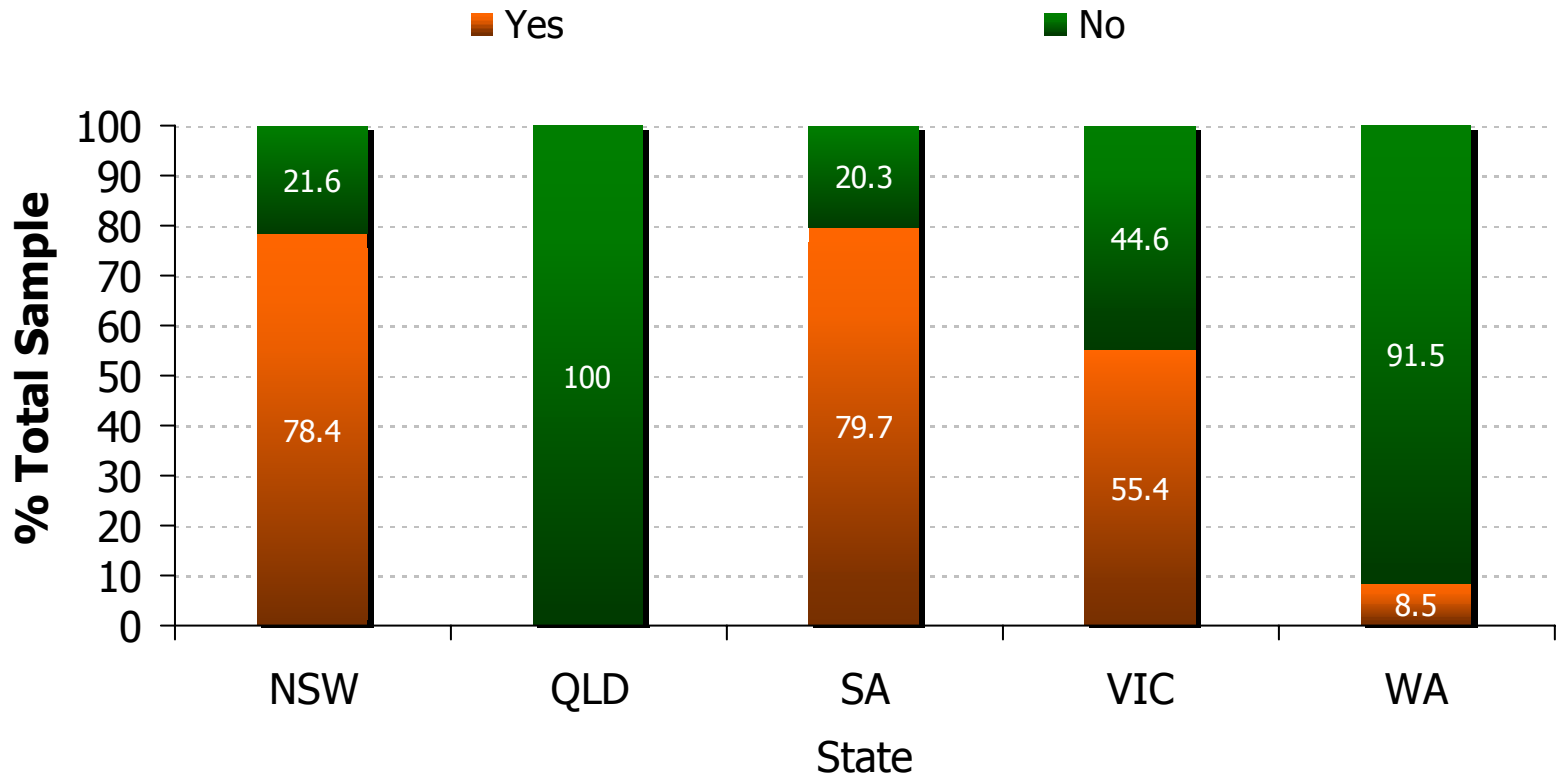
By State

■ Distribution Centre
 ■ Wholesale Market
 ■ Packing Shed
 ■ Other



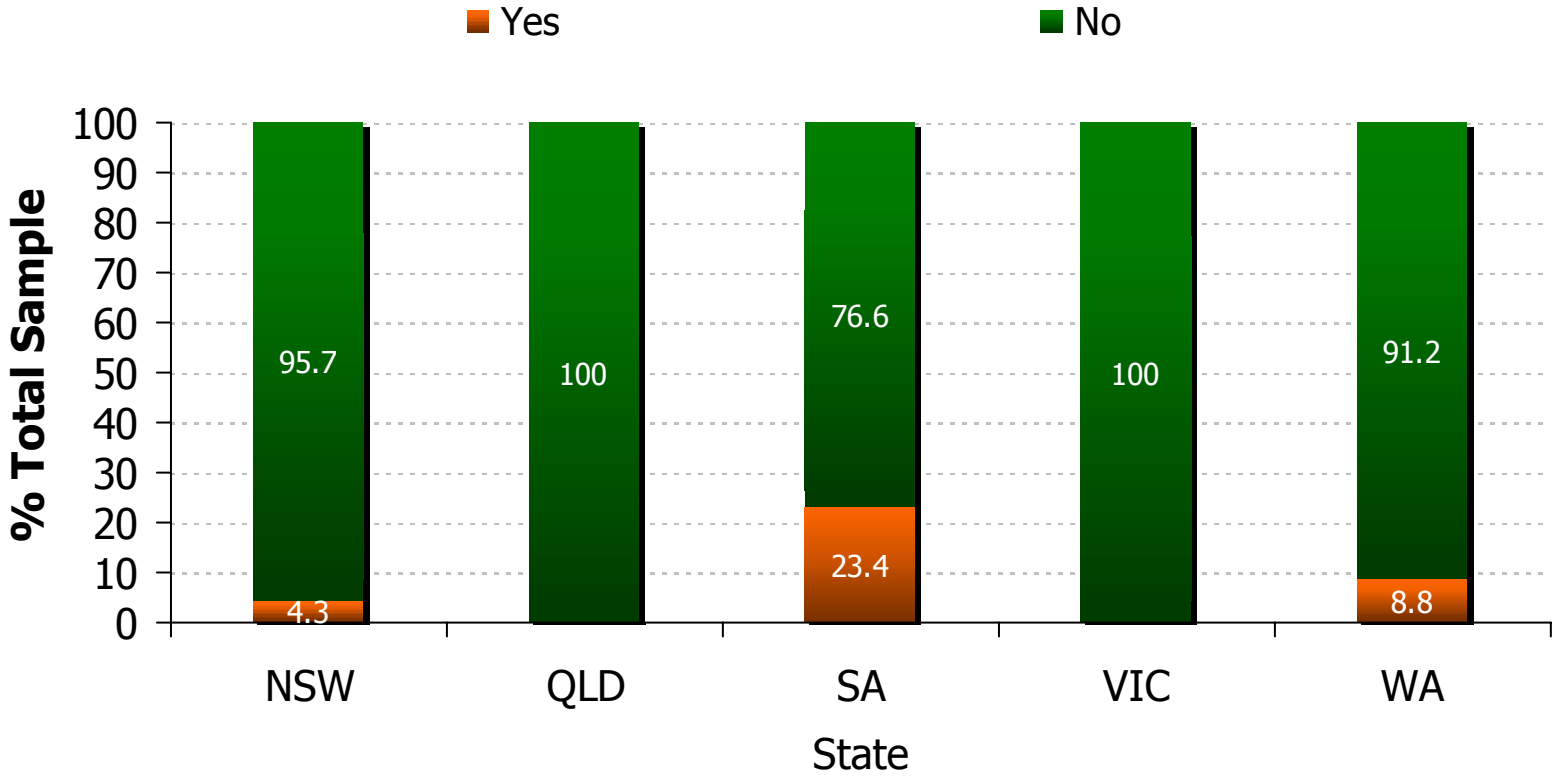
Quality Checked

By State



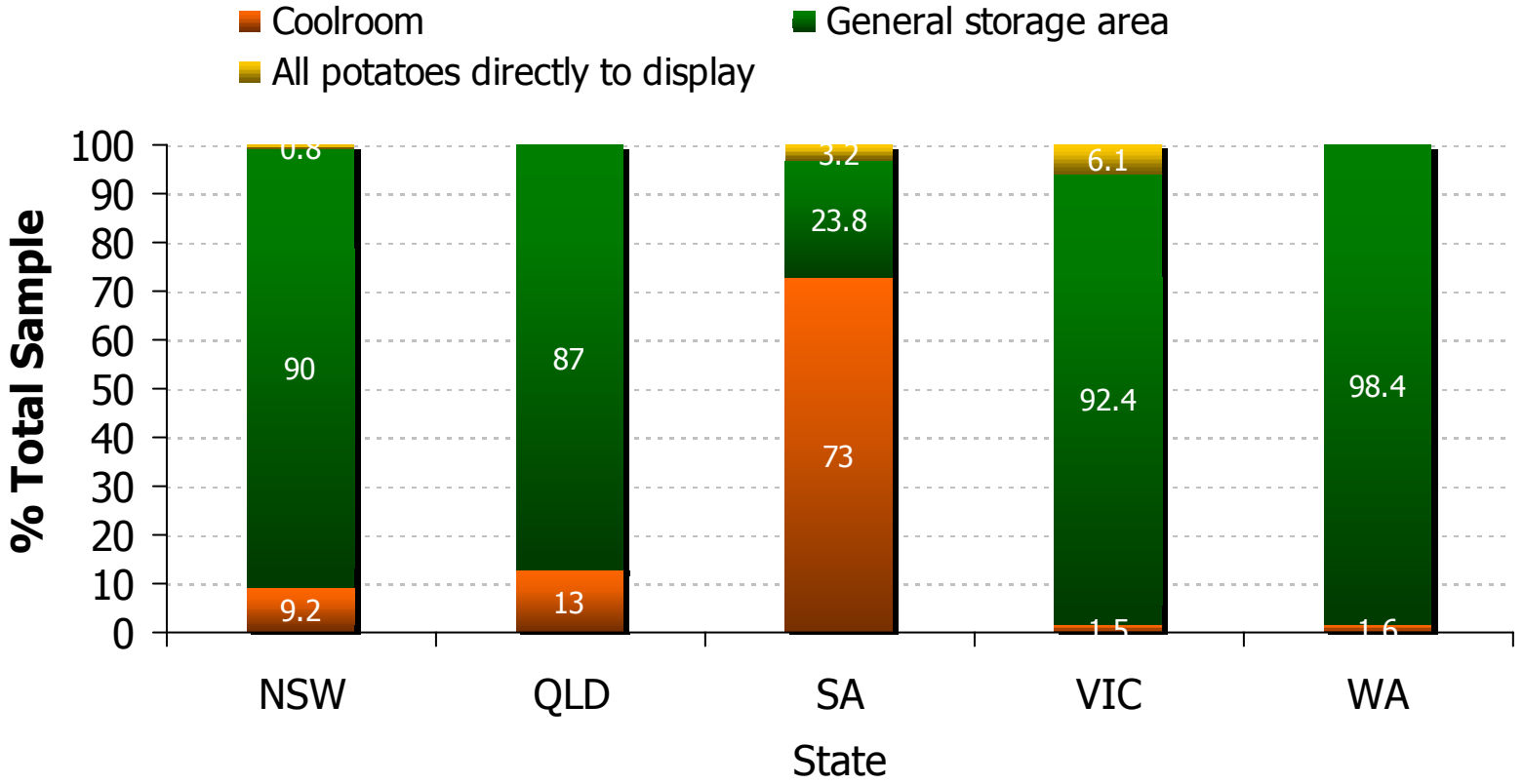
Temperature Checked

By State



Storage Place

By State

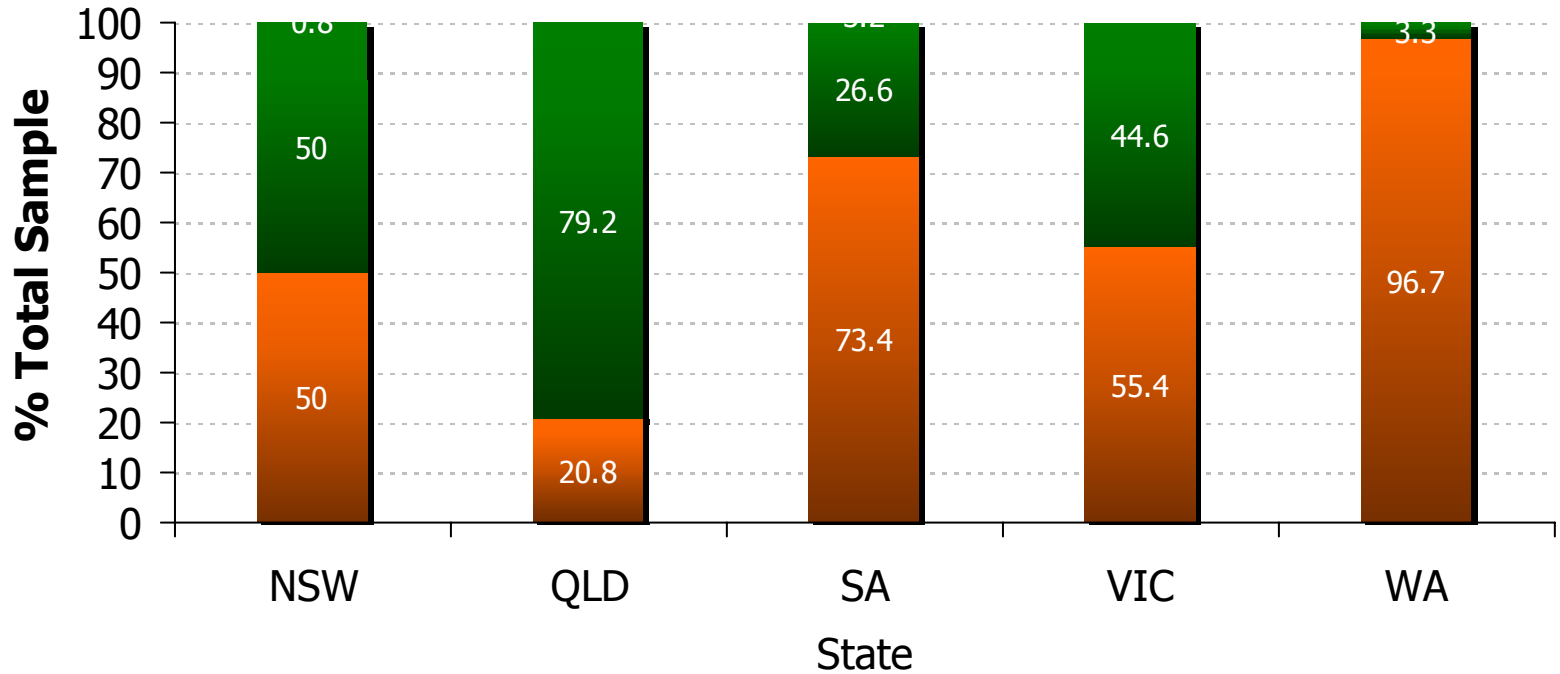


Storage Light

By State



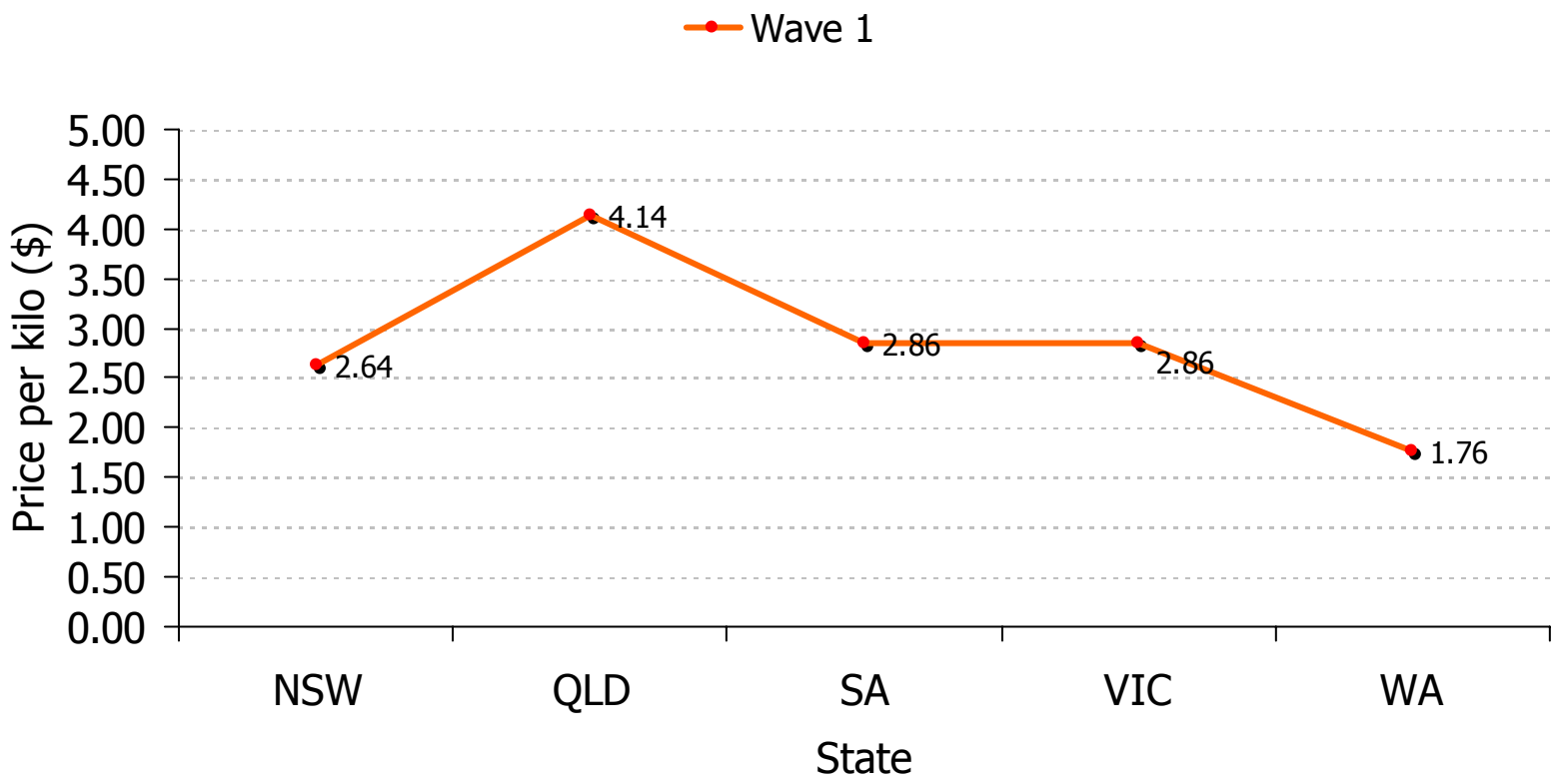
Kept in dark Not All potatoes directly to display



State

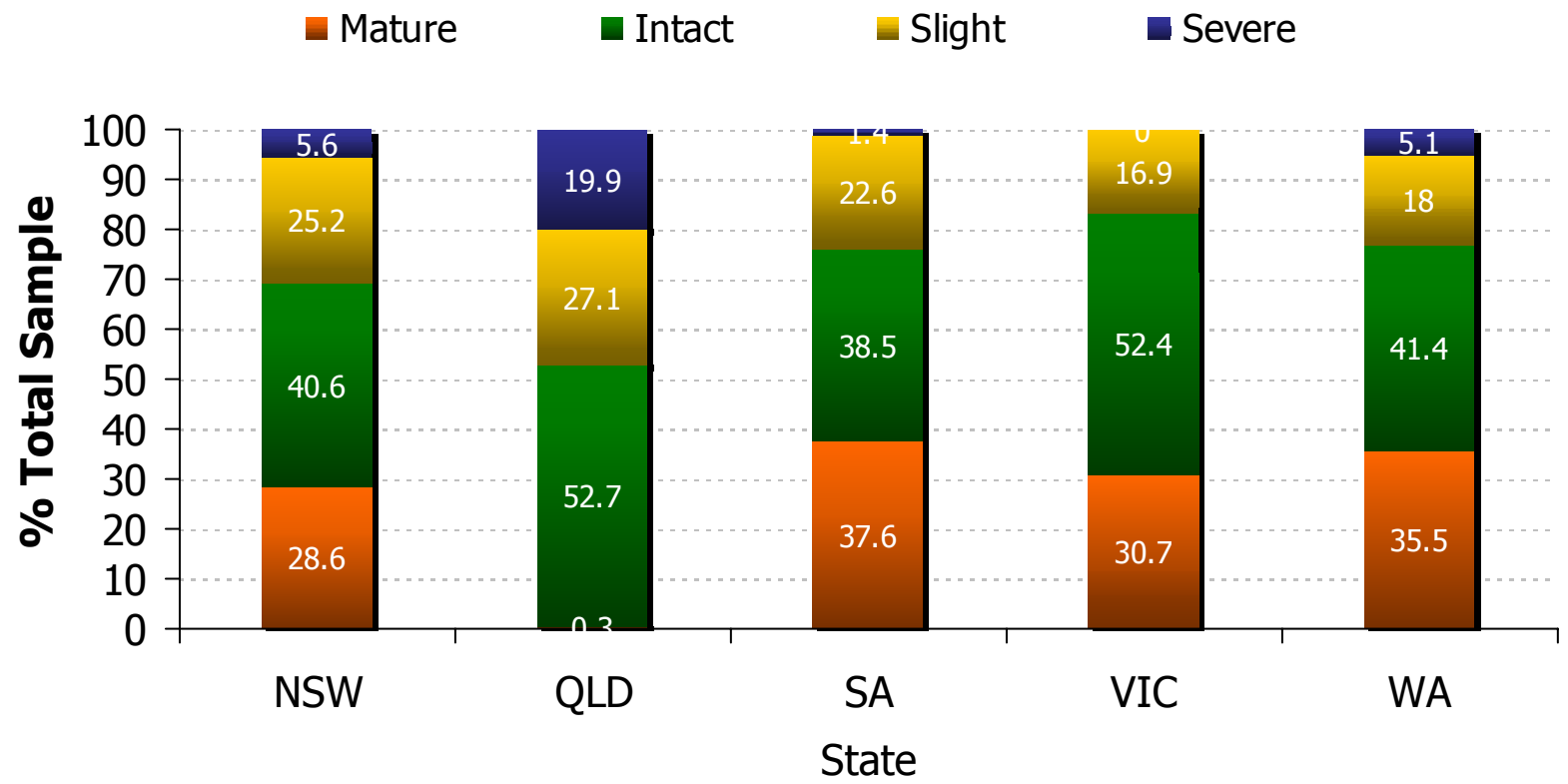
Price Per Kilogram

By State (Average)



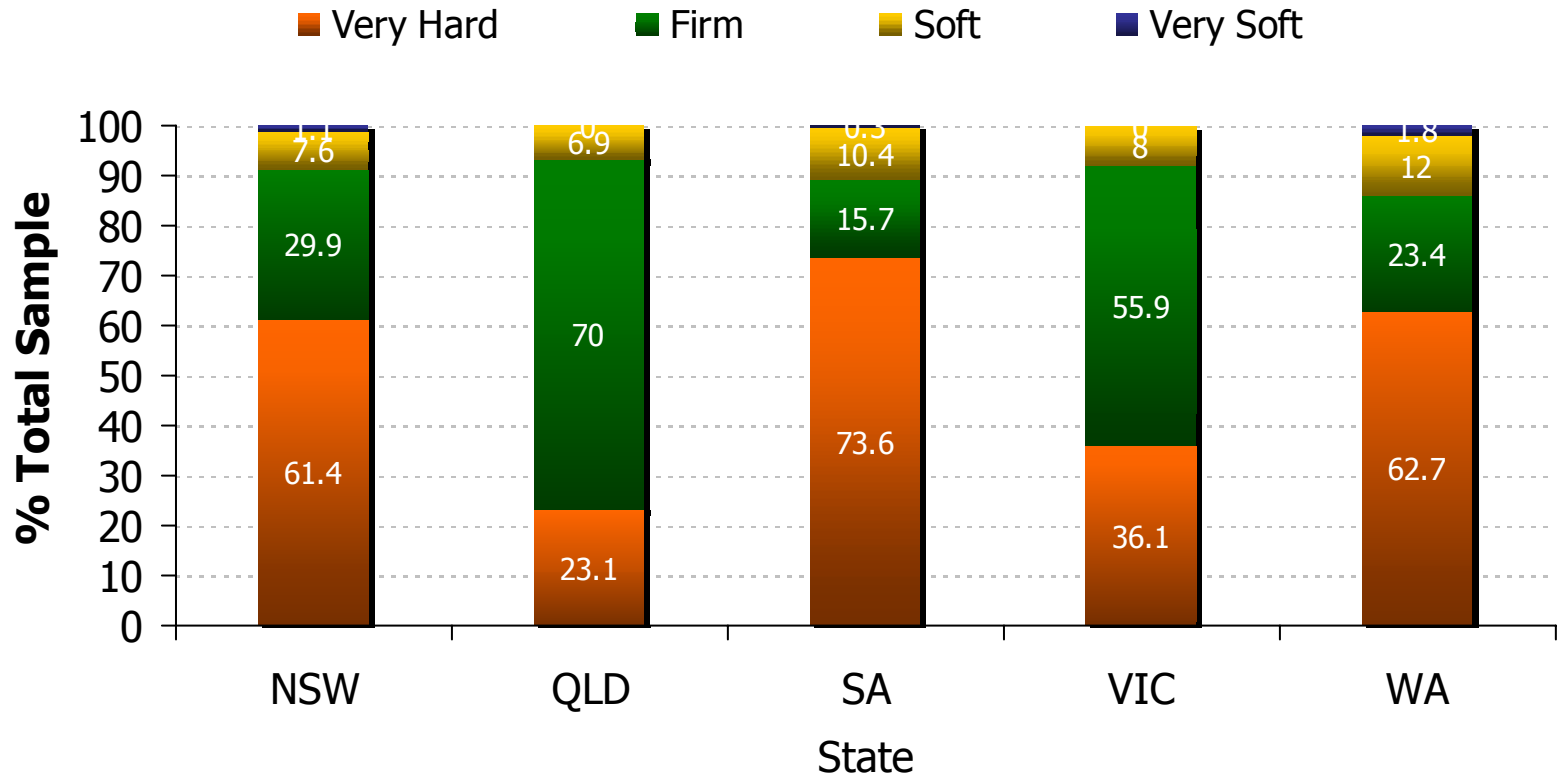
Skinning

By State



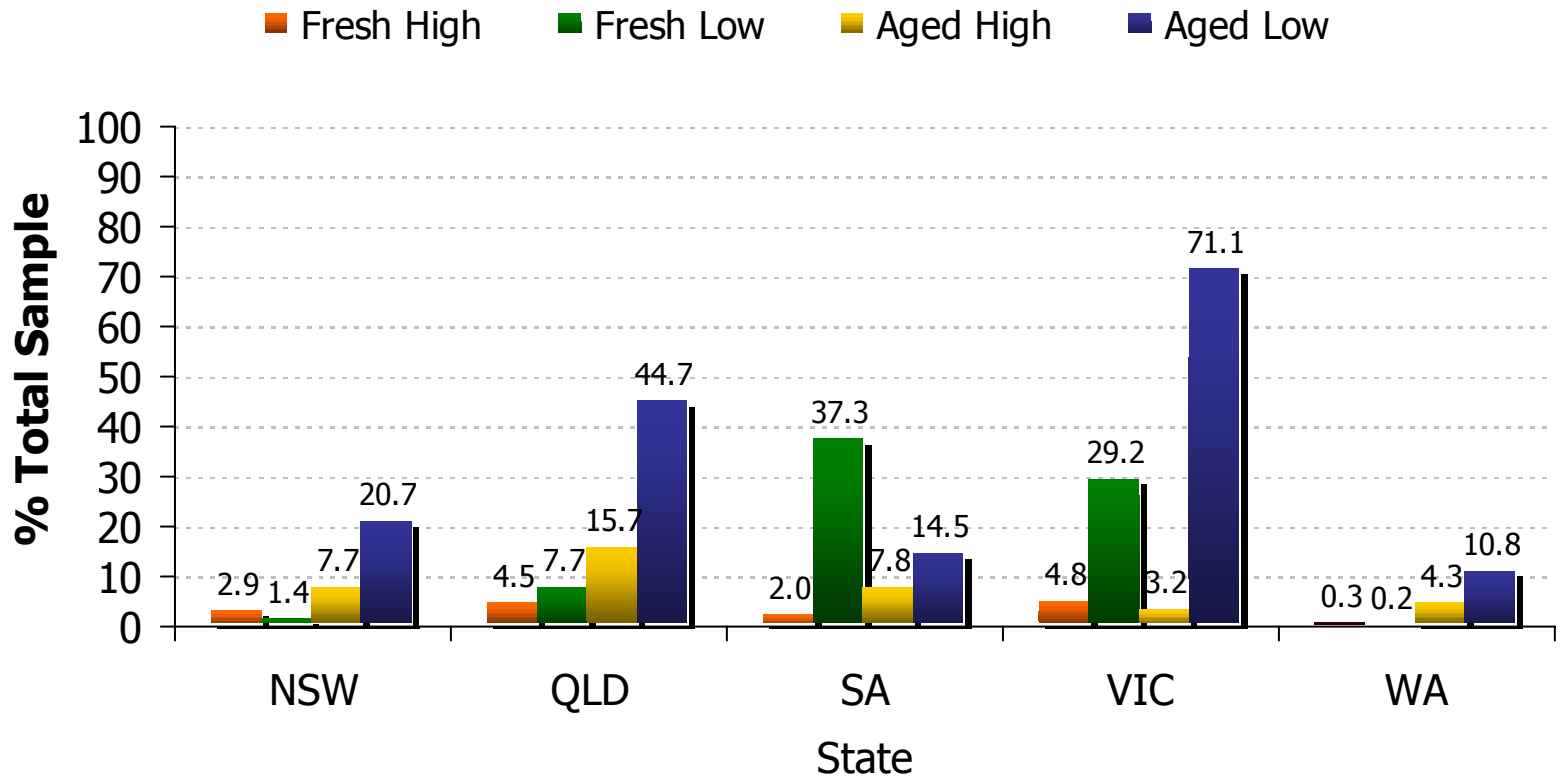
Texture

By State



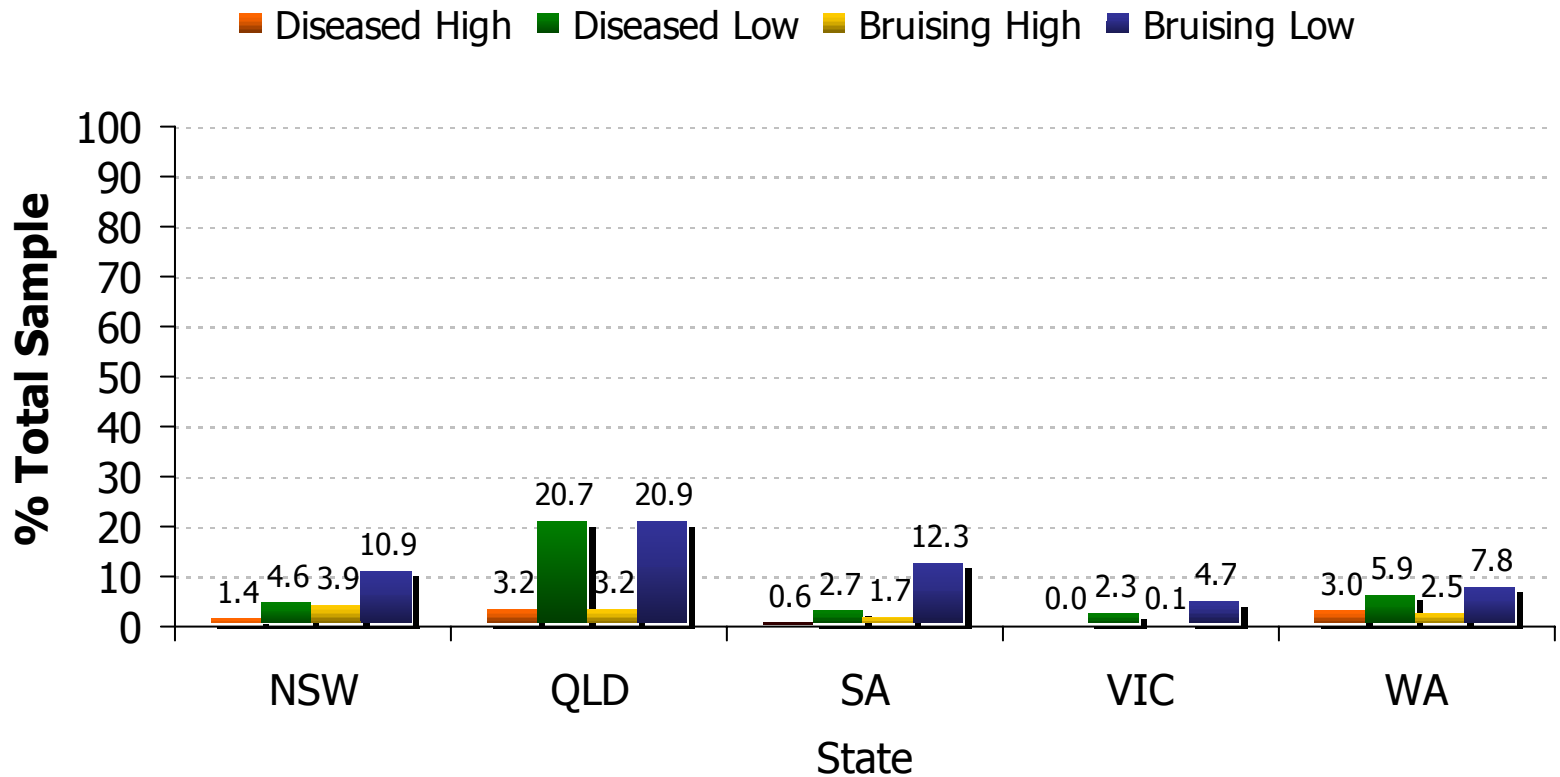
Surface Defects & Damage

By State



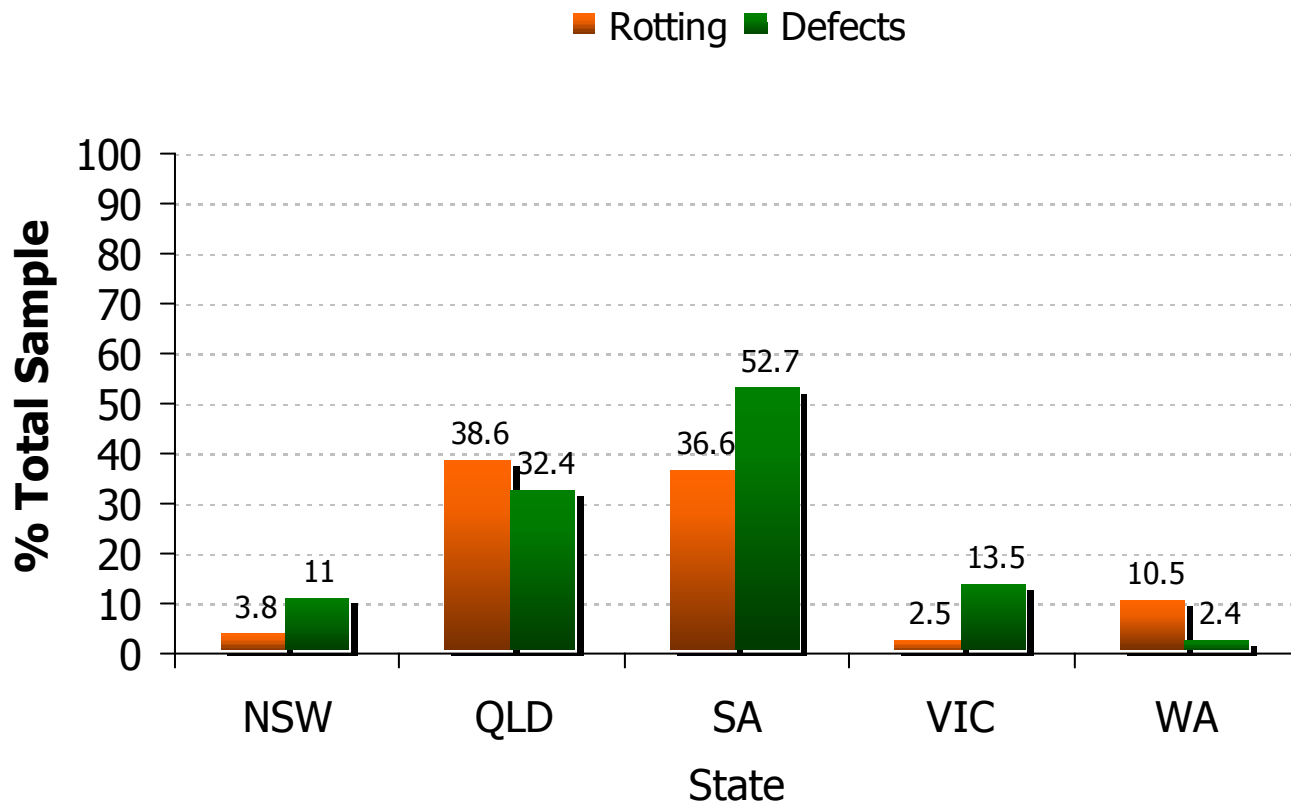
Surface Defects & Damage

By State



Rotting / Defects

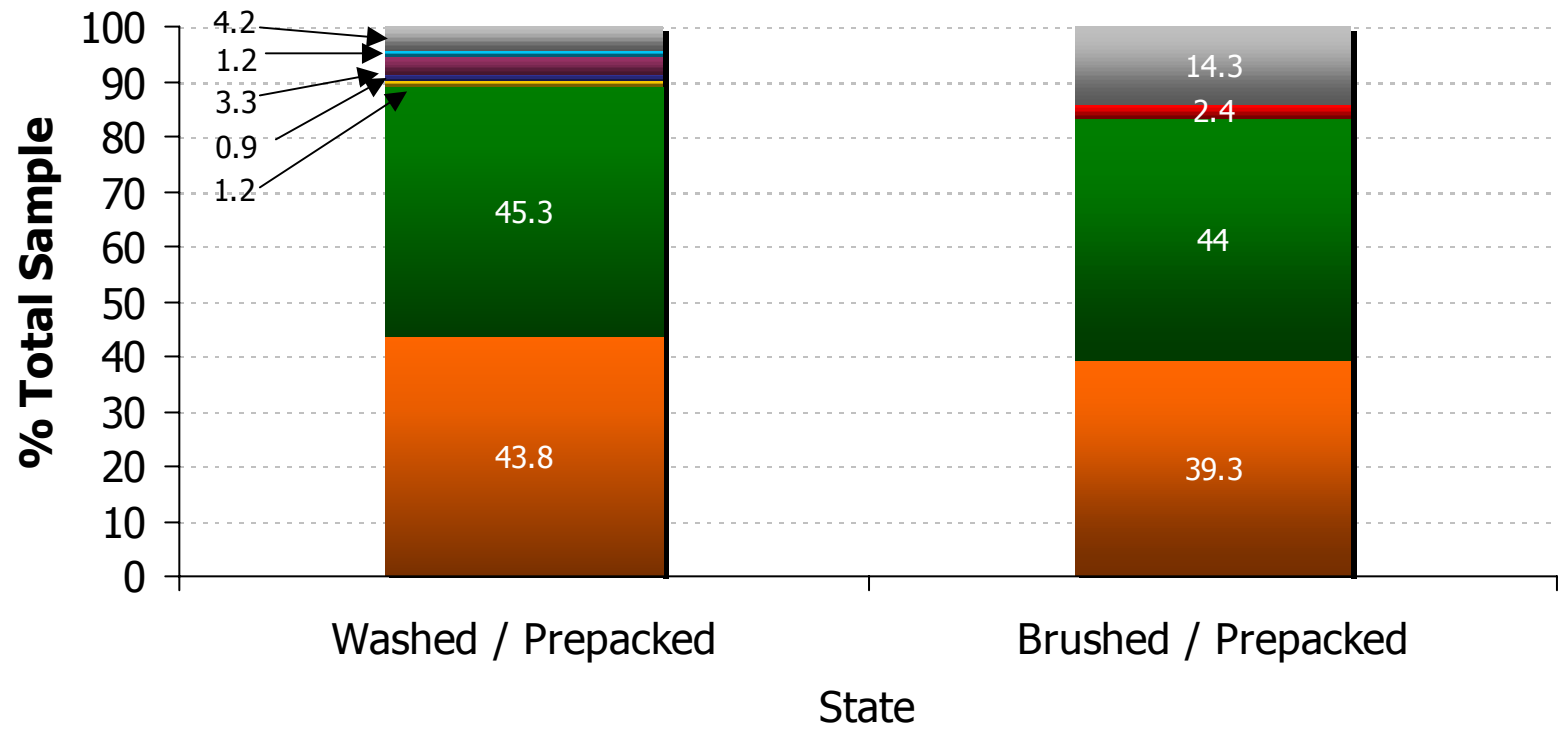
By State



Bag Type

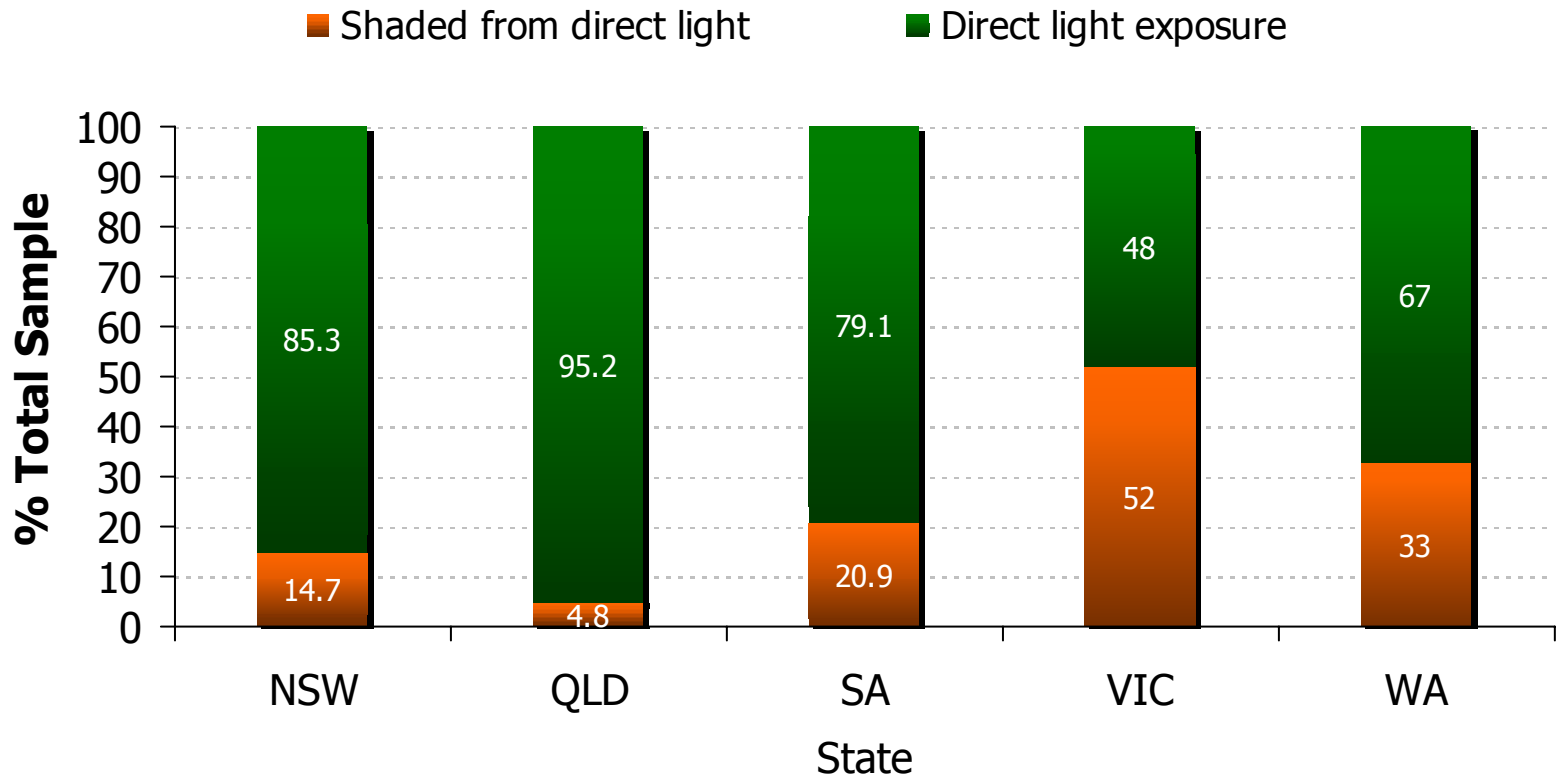
By Style / Pack

- Ventilated clear plastic
- Non ventilated clear plastic
- Net bag
- Carton
- Ventilated colour plastic
- Non ventilated colour plastic
- Paper bag
- Other



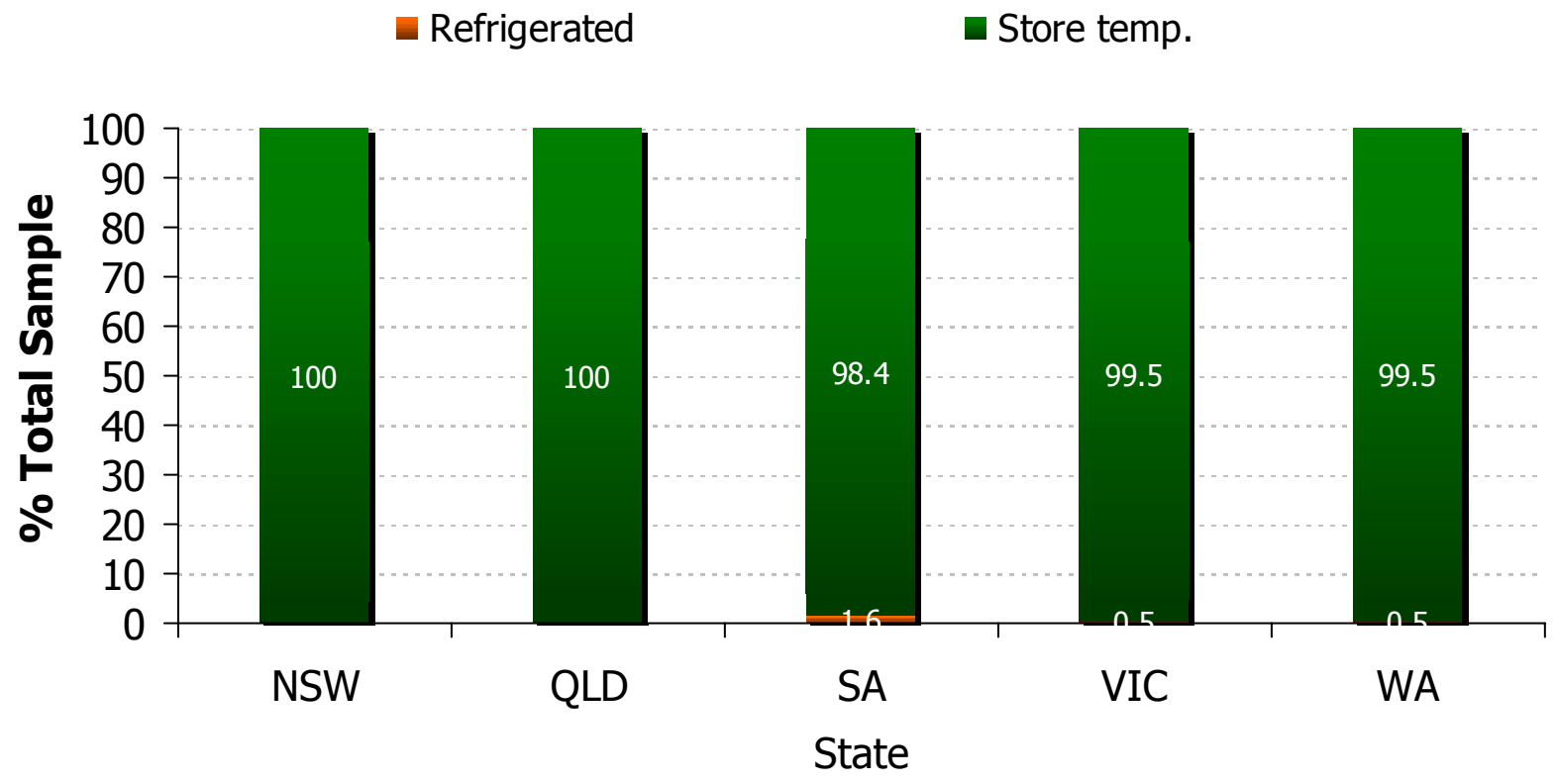
Display Exposure

By State



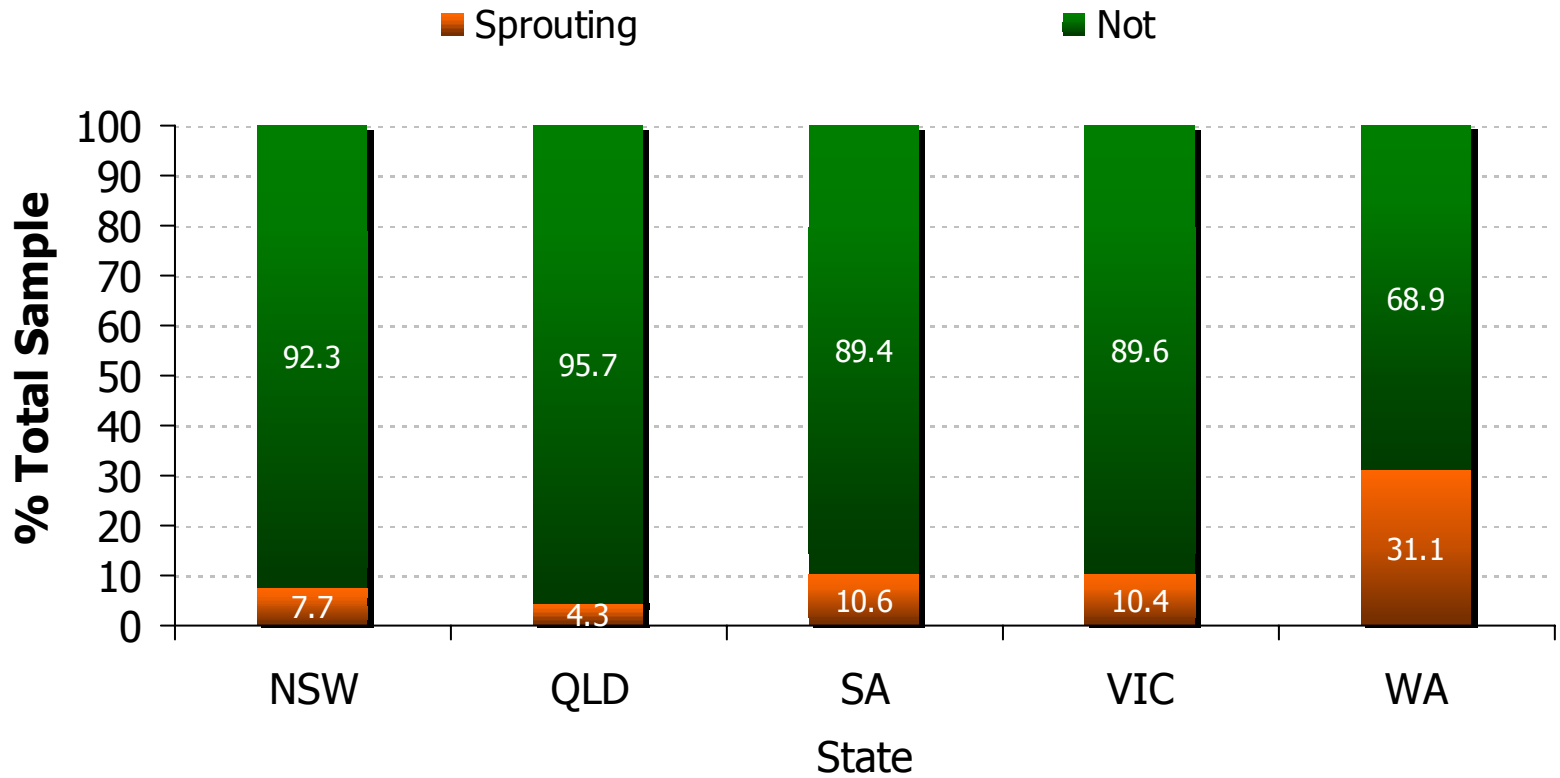
Display Temperature

By State



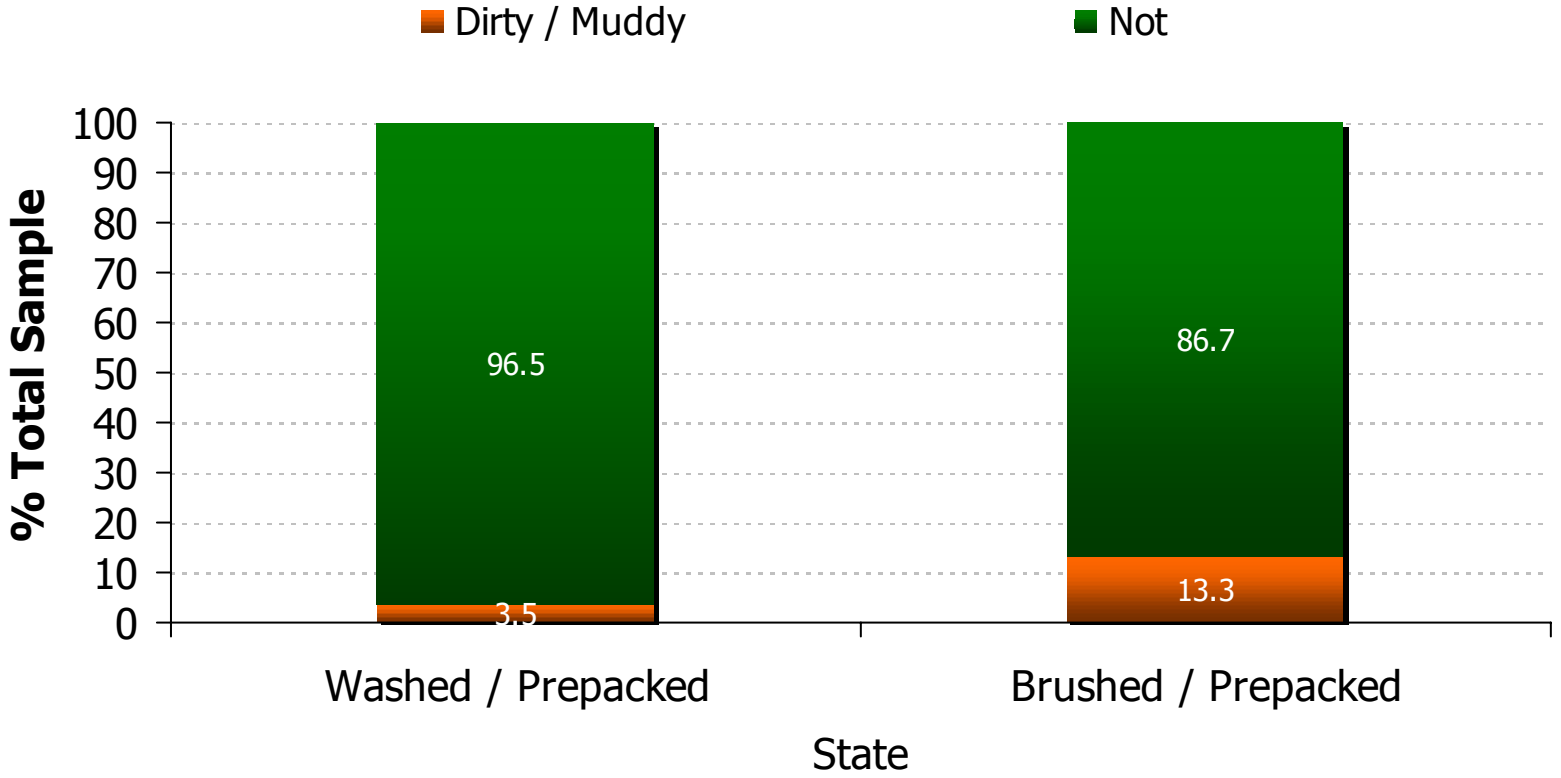
Sprouting

By State



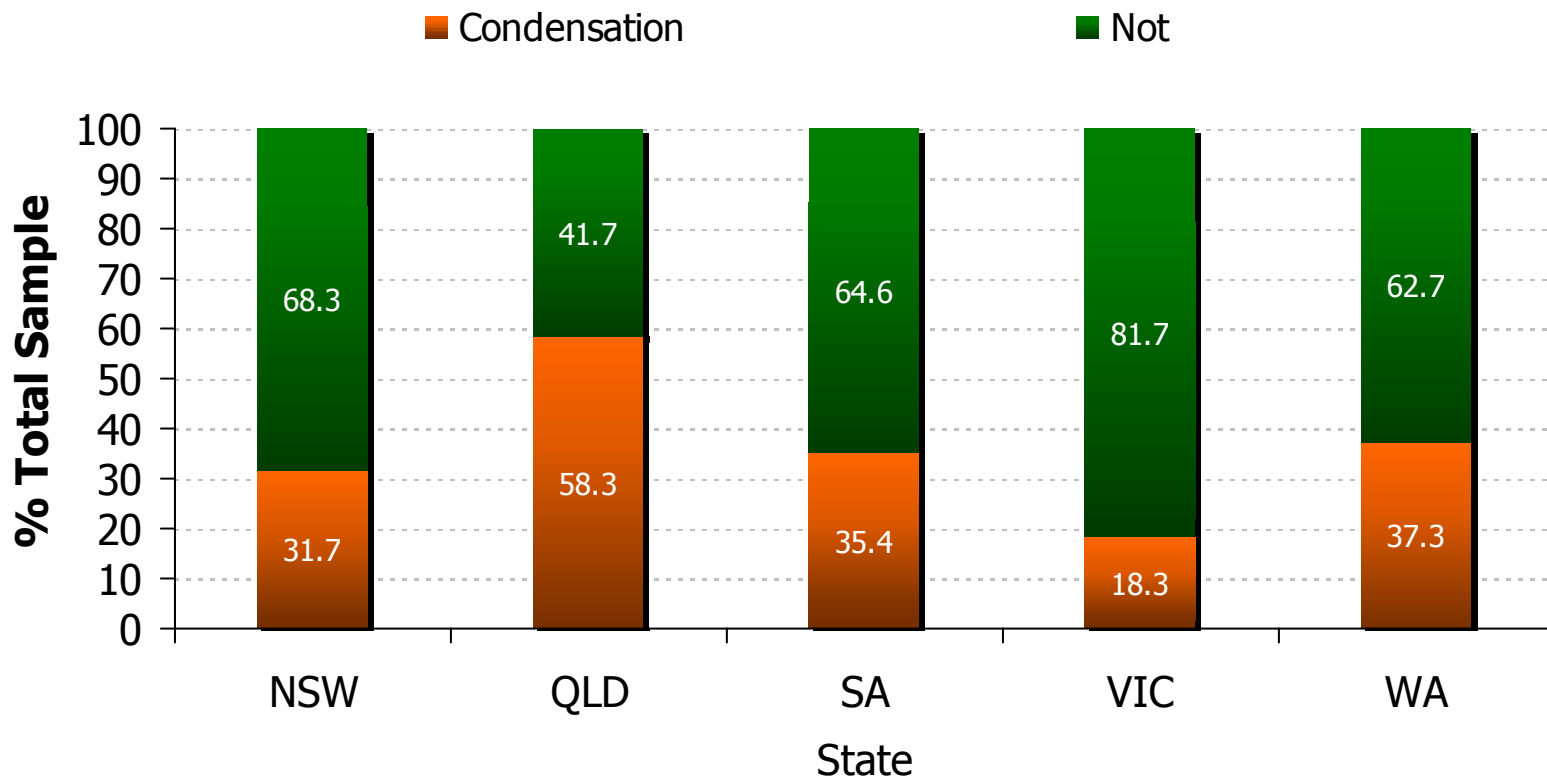
Appearance of Bag

By Style / Pack



Condensation

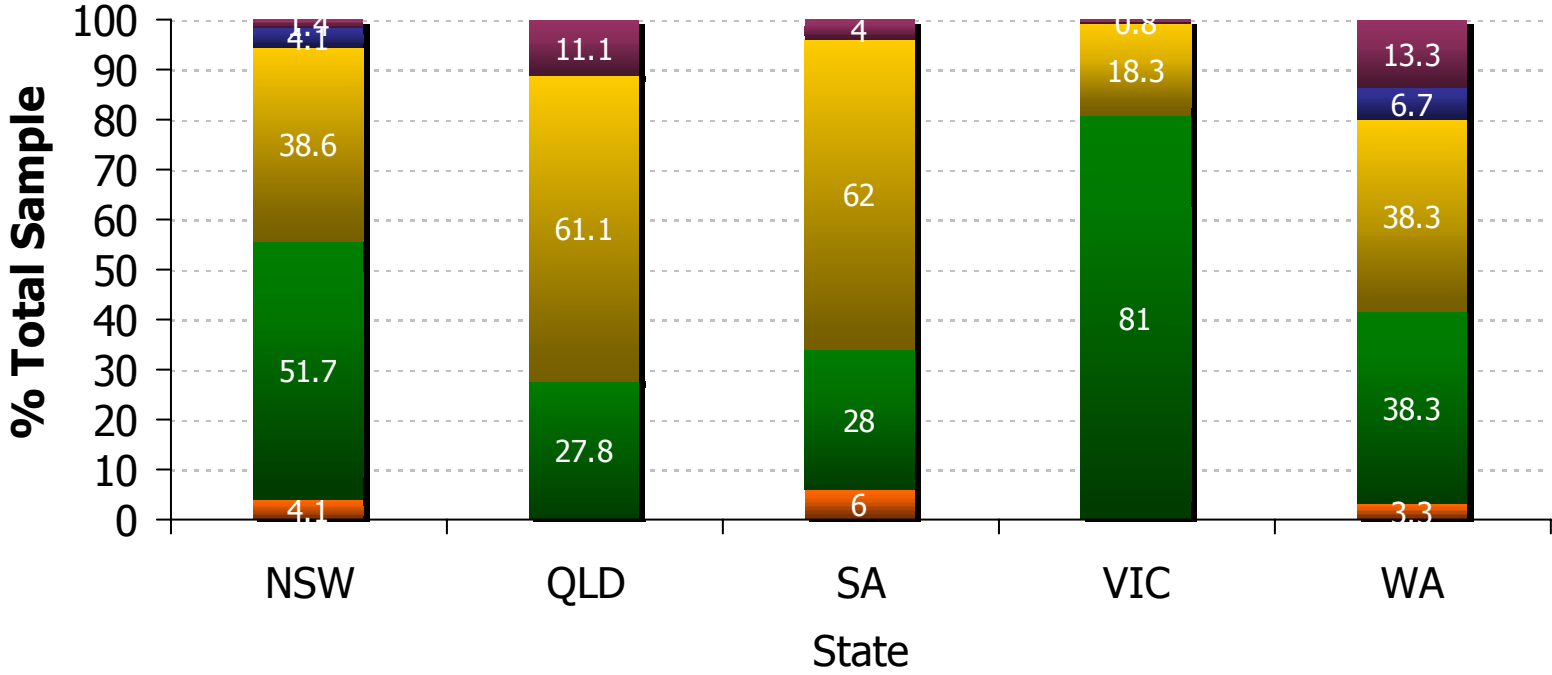
By State



Dampness

By State

■ No
 ■ Dry
 ■ Damp
 ■ Free Moisture
 ■ Water droplets

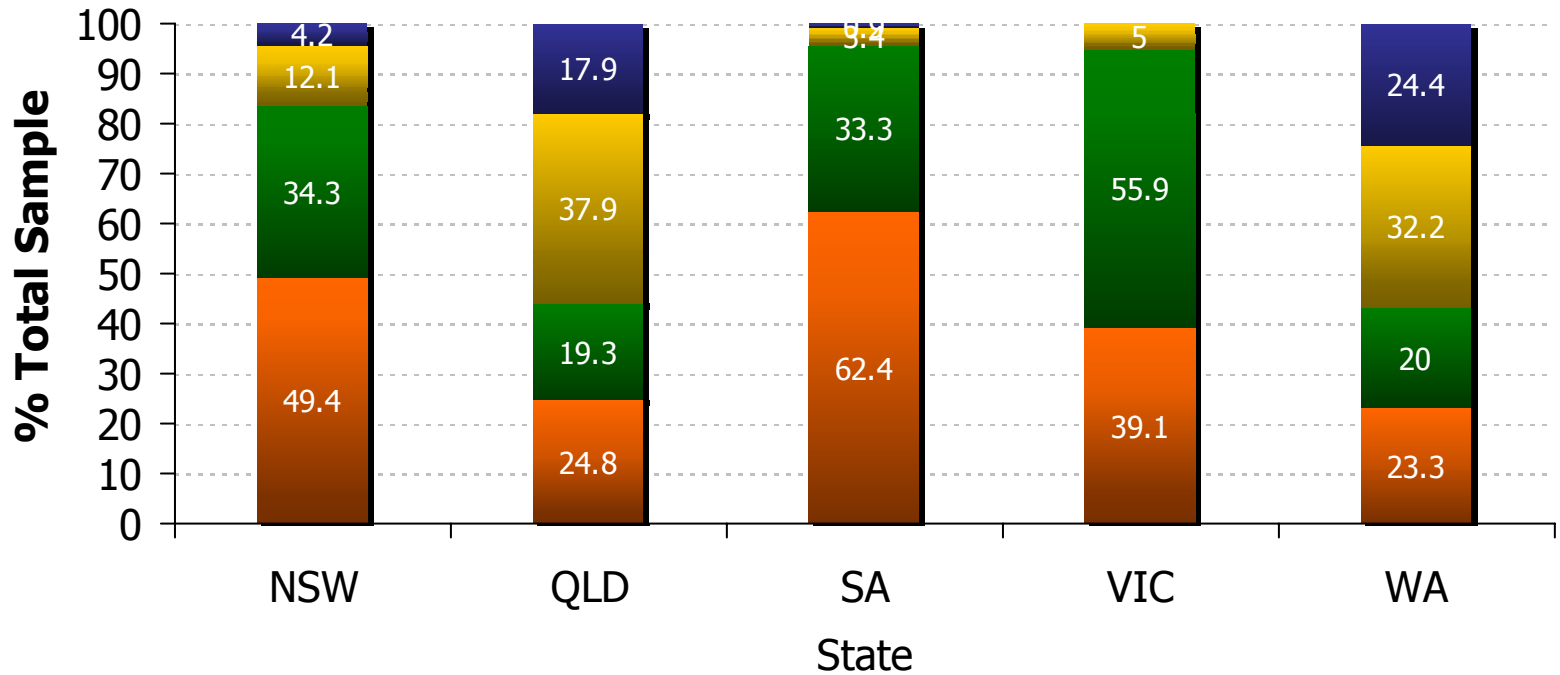


Brightness

By State



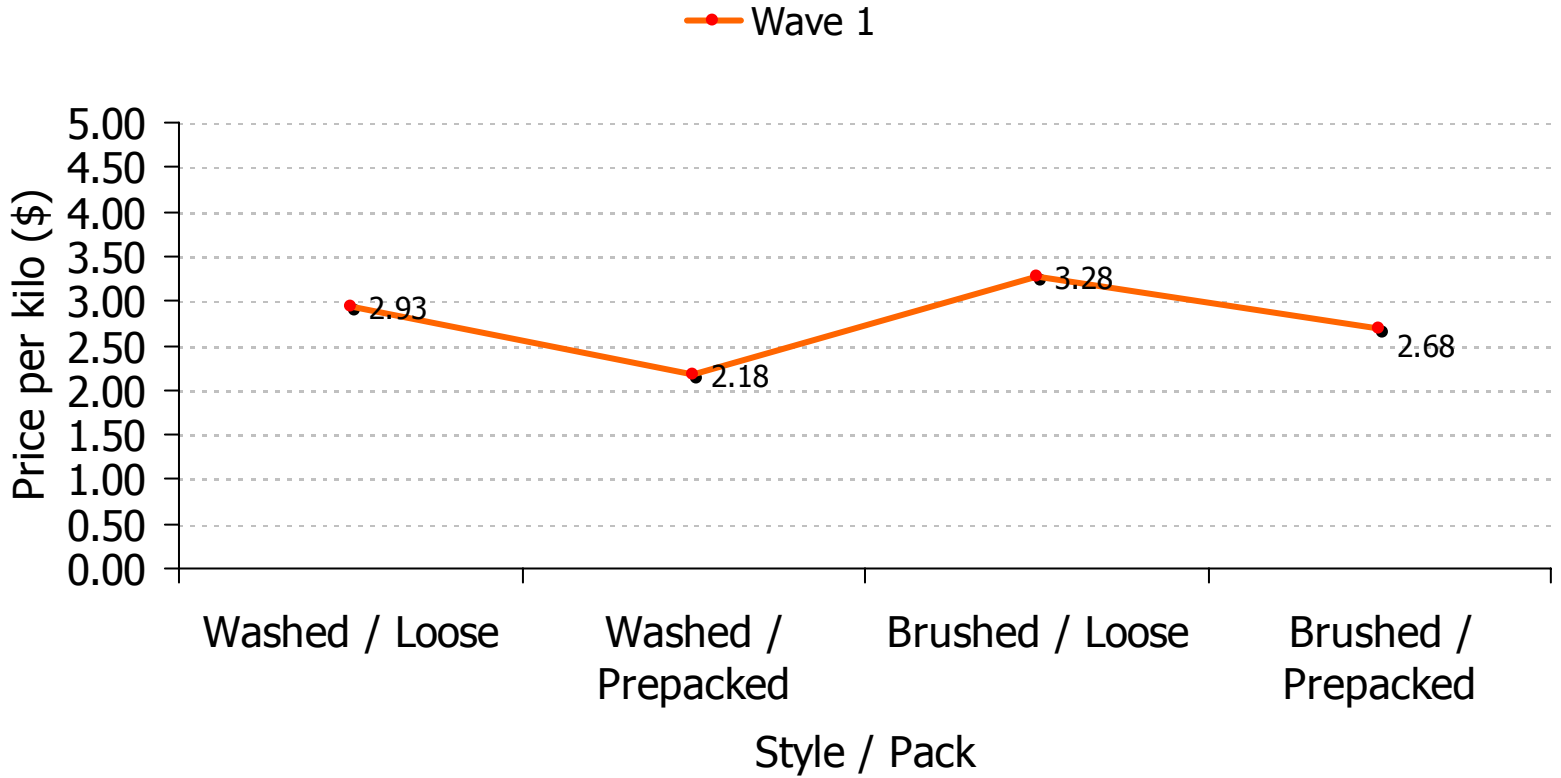
- Fresh with surface sheen
- Fresh but no surface sheen
- Slightly dull in appearance
- Strong darkening



Style / Pack

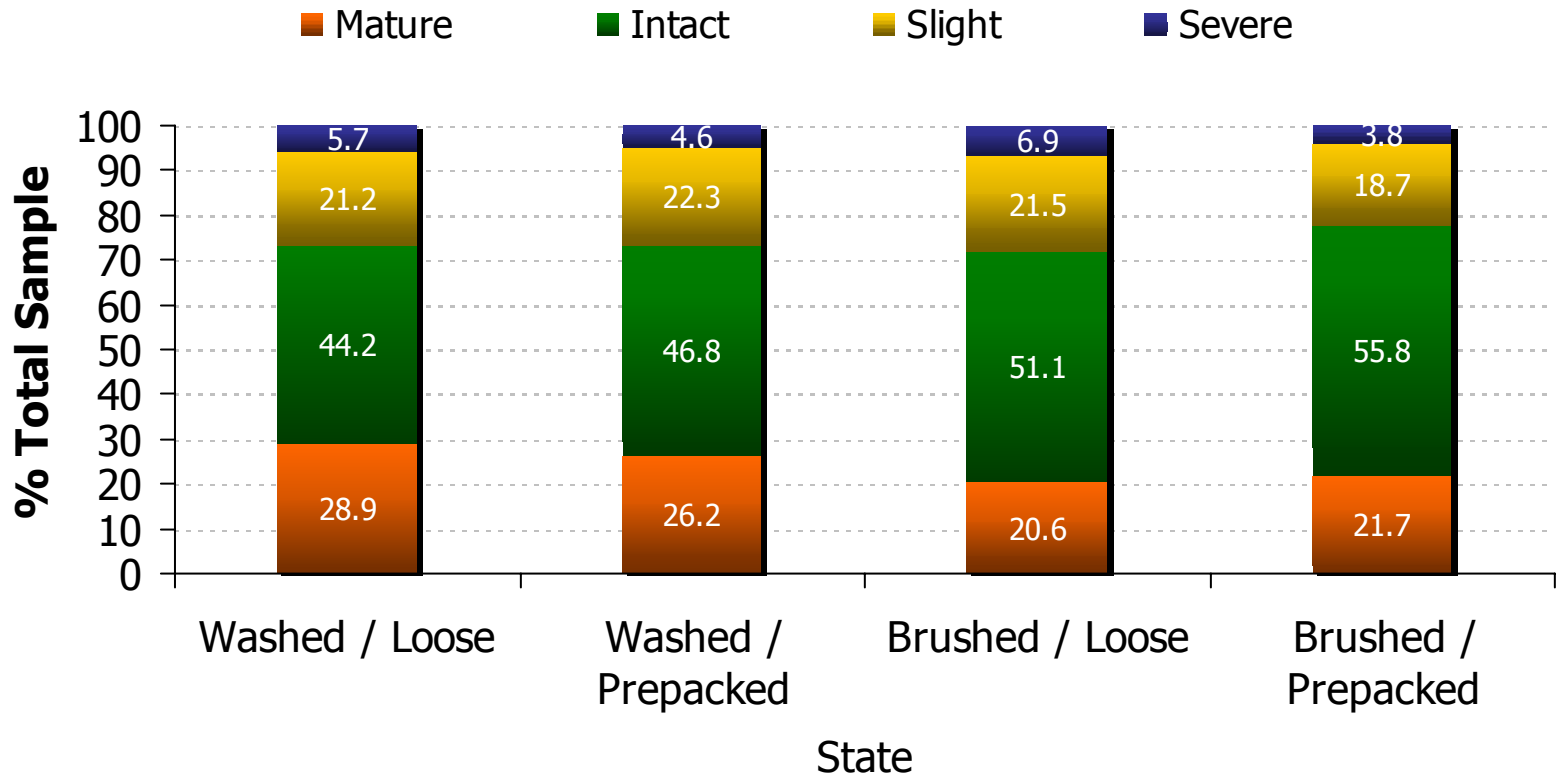
Price Per Kilogram

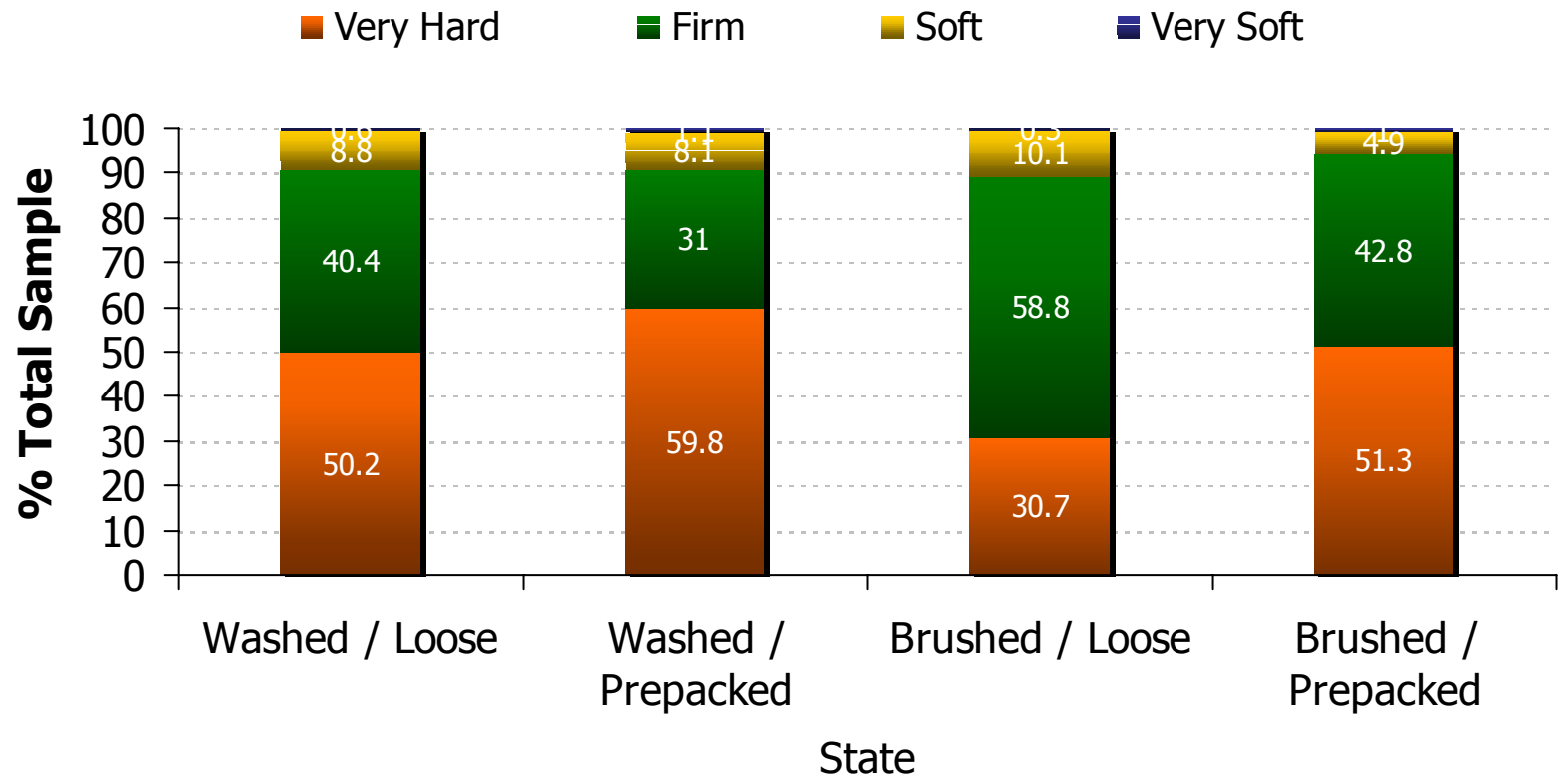
By Style / Pack (Average)



Skinning

By Style / Pack



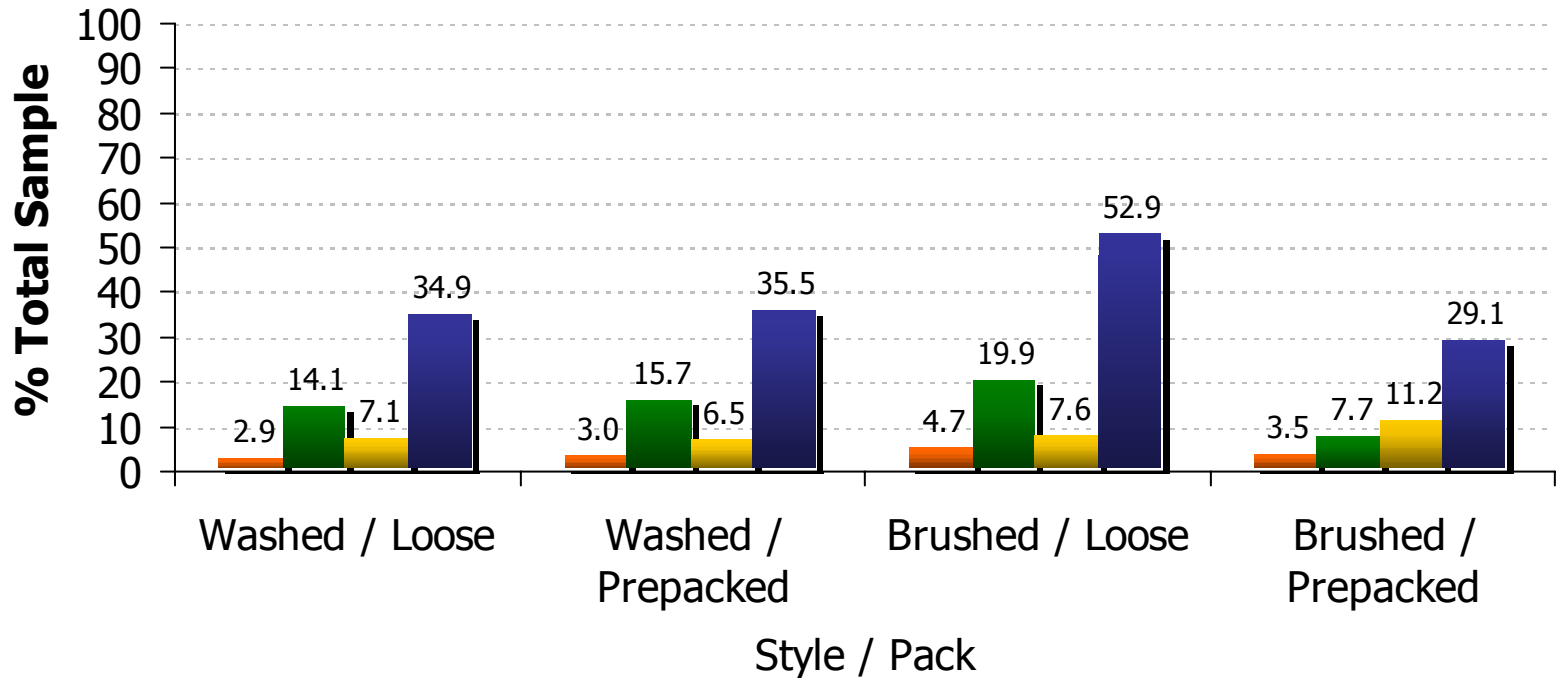


Surface Defects & Damage

By Style / Pack



■ Fresh High
 ■ Fresh Low
 ■ Aged High
 ■ Aged Low

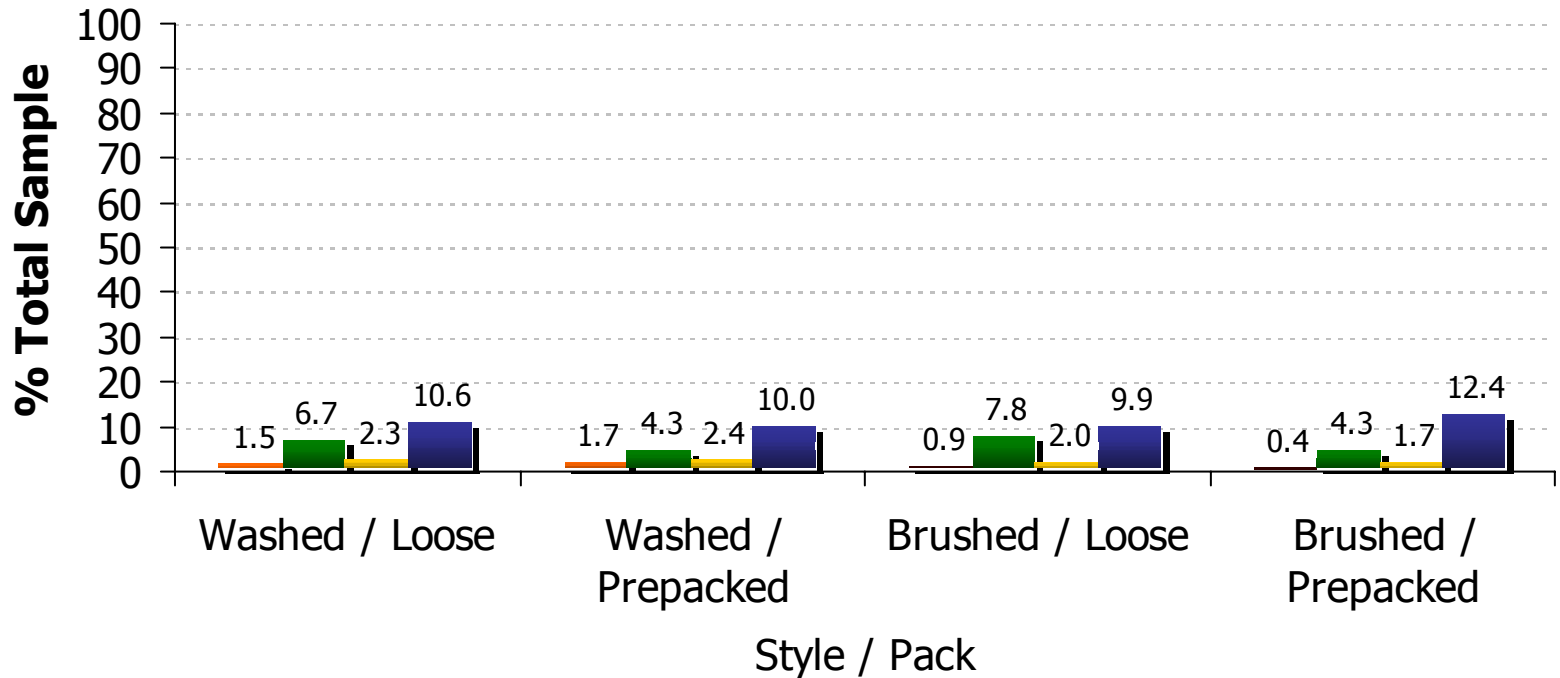


Surface Defects & Damage

By Style / Pack

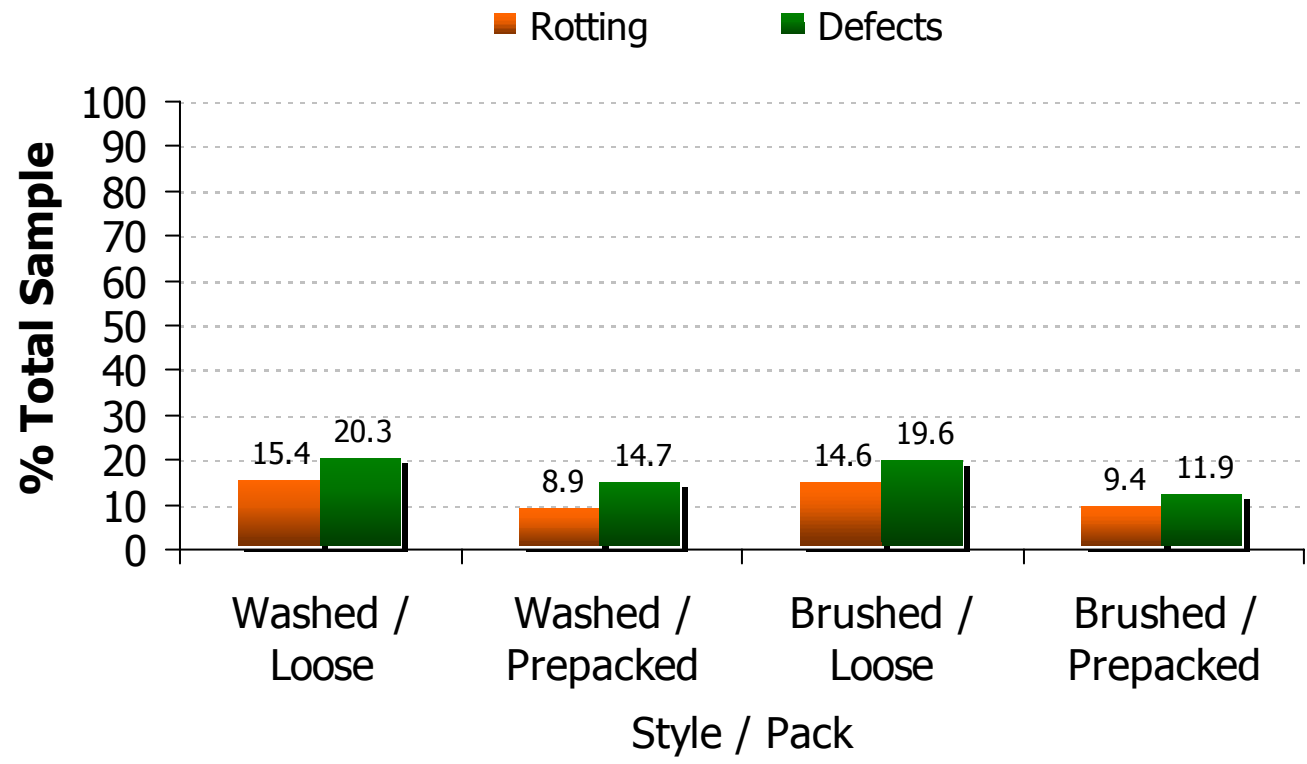


■ Diseased High
 ■ Diseased Low
 ■ Bruising High
 ■ Bruising Low



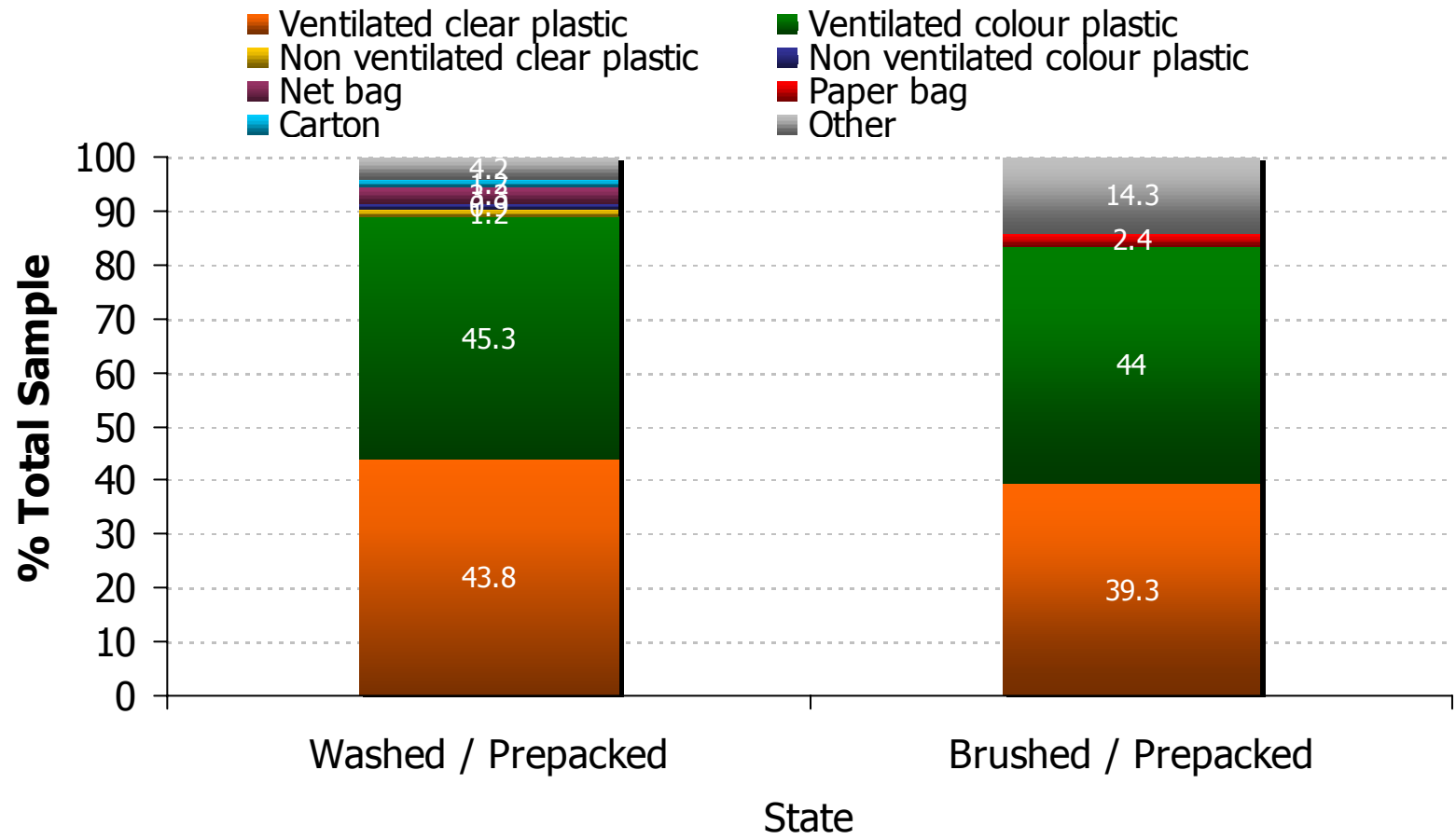
Rotting / Defects

By Style / Pack



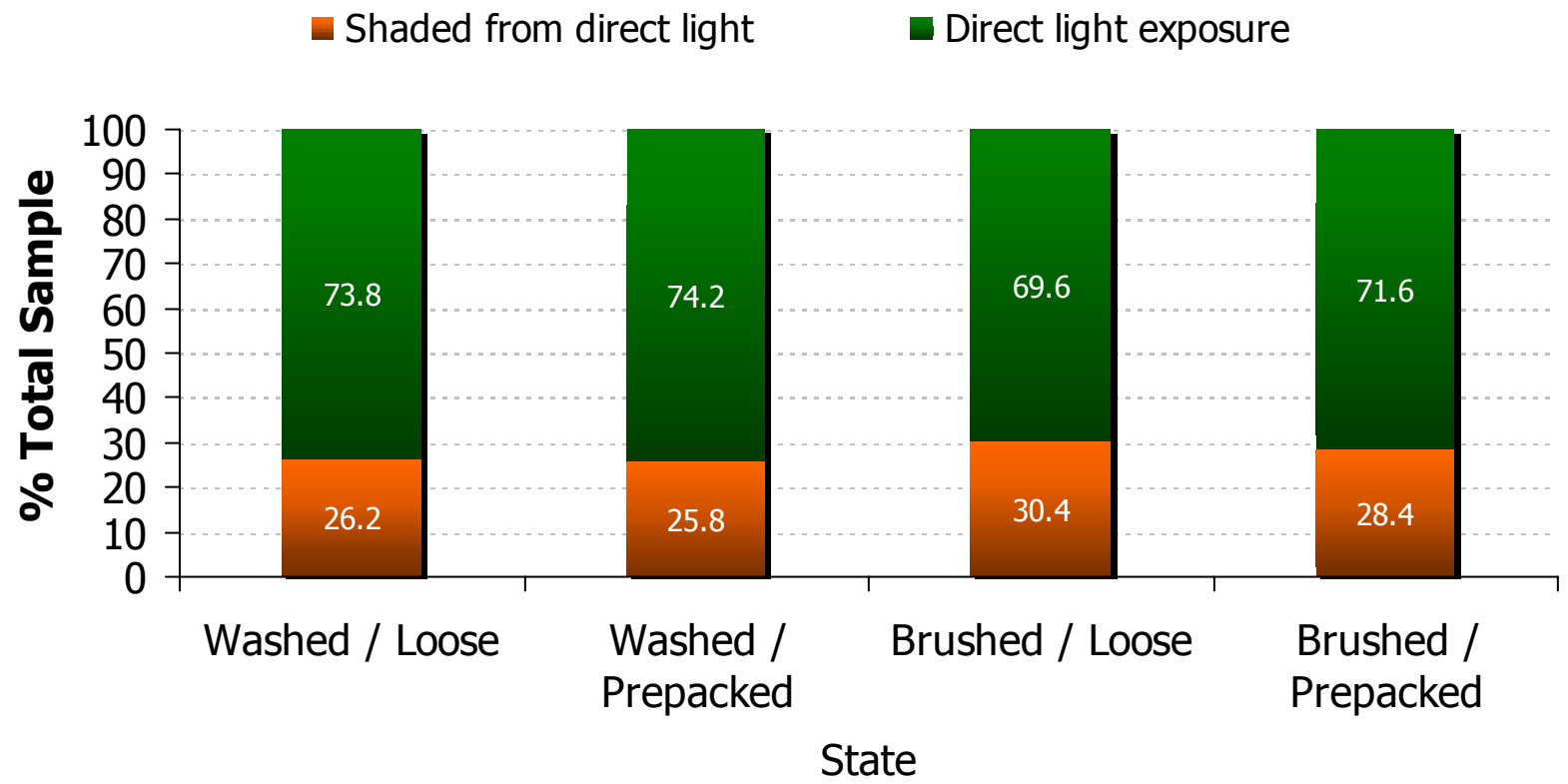
Bag Type

By Style / Pack



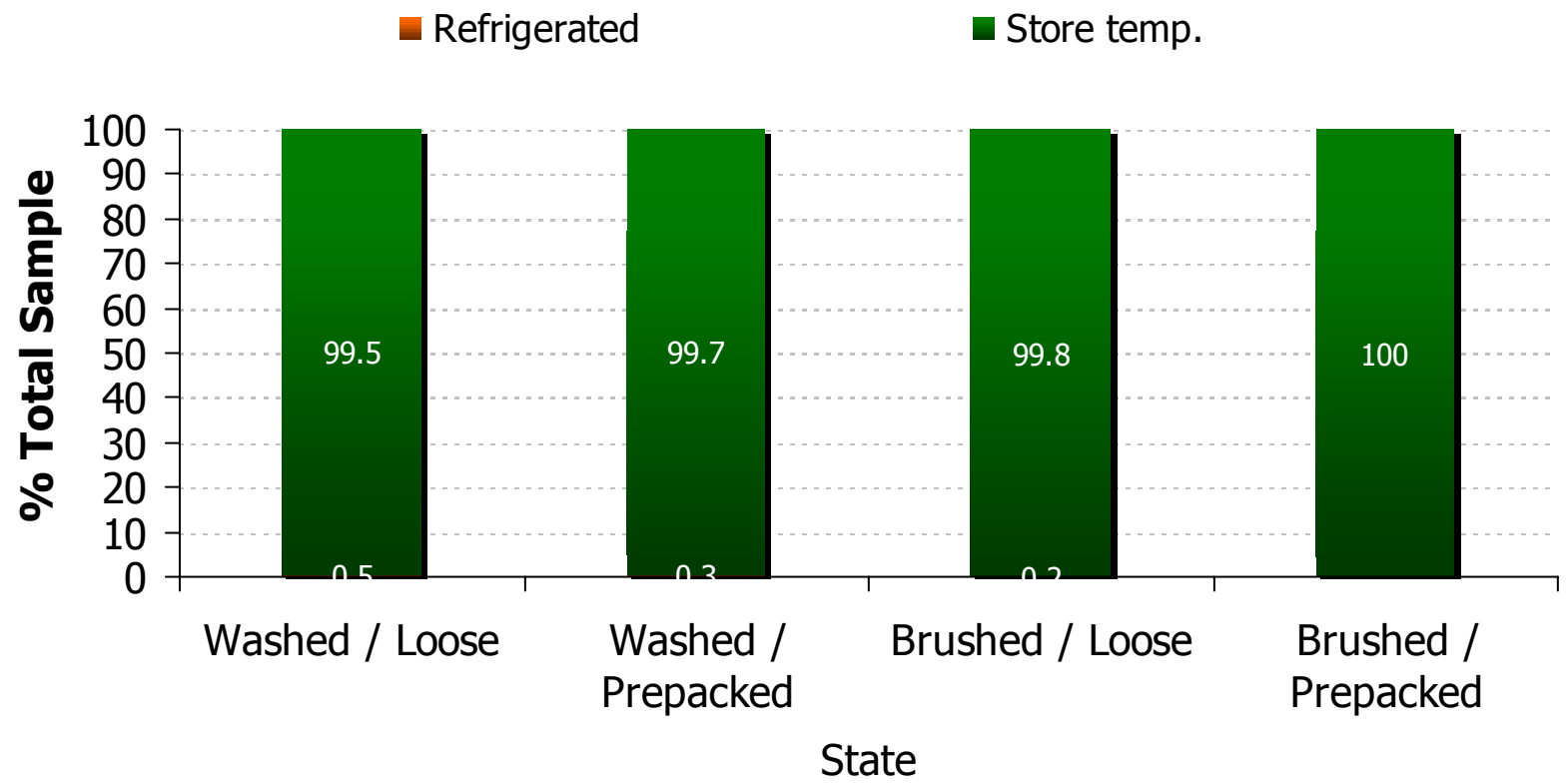
Display Exposure

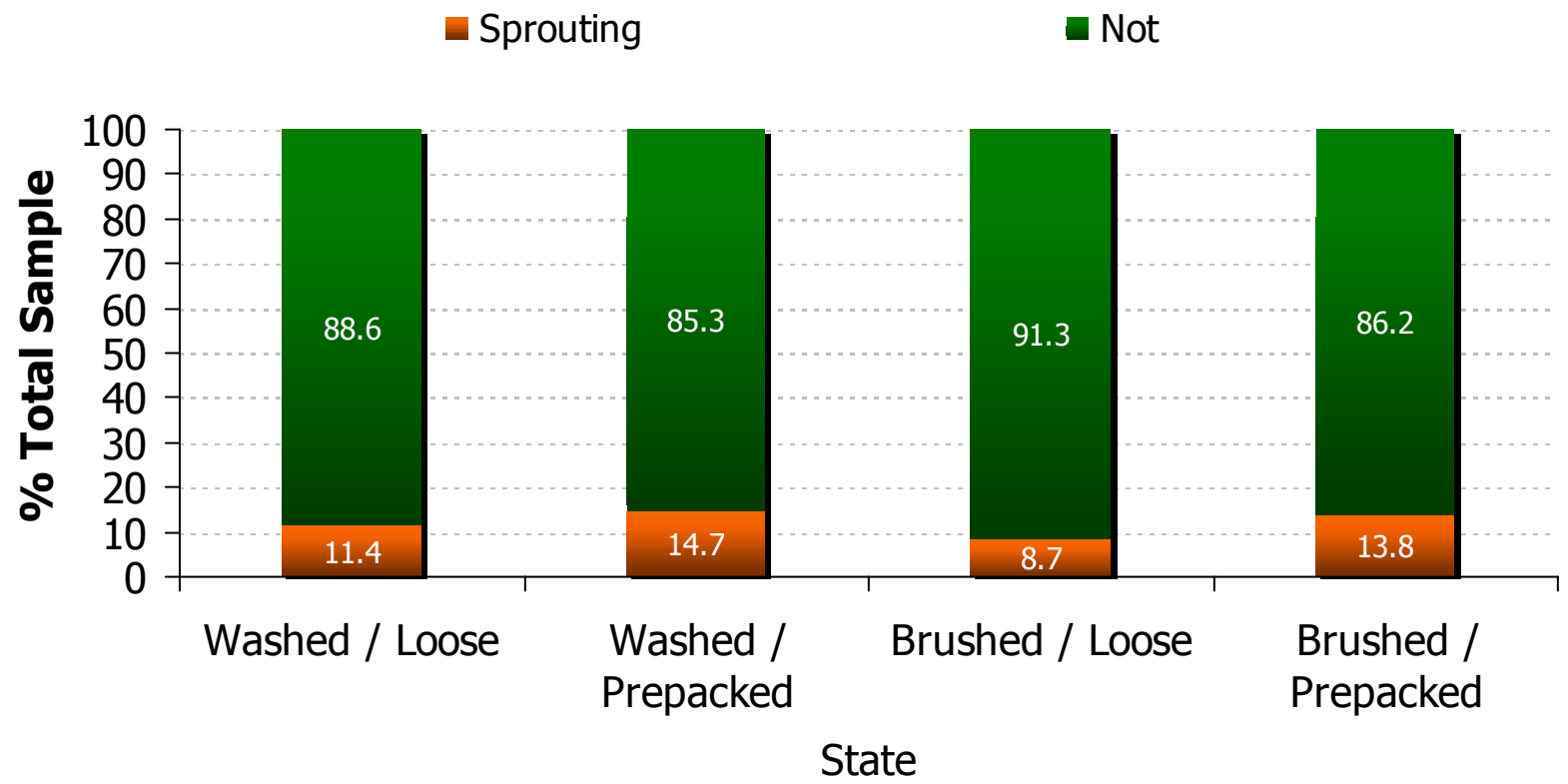
By Style / Pack



Display Temperature

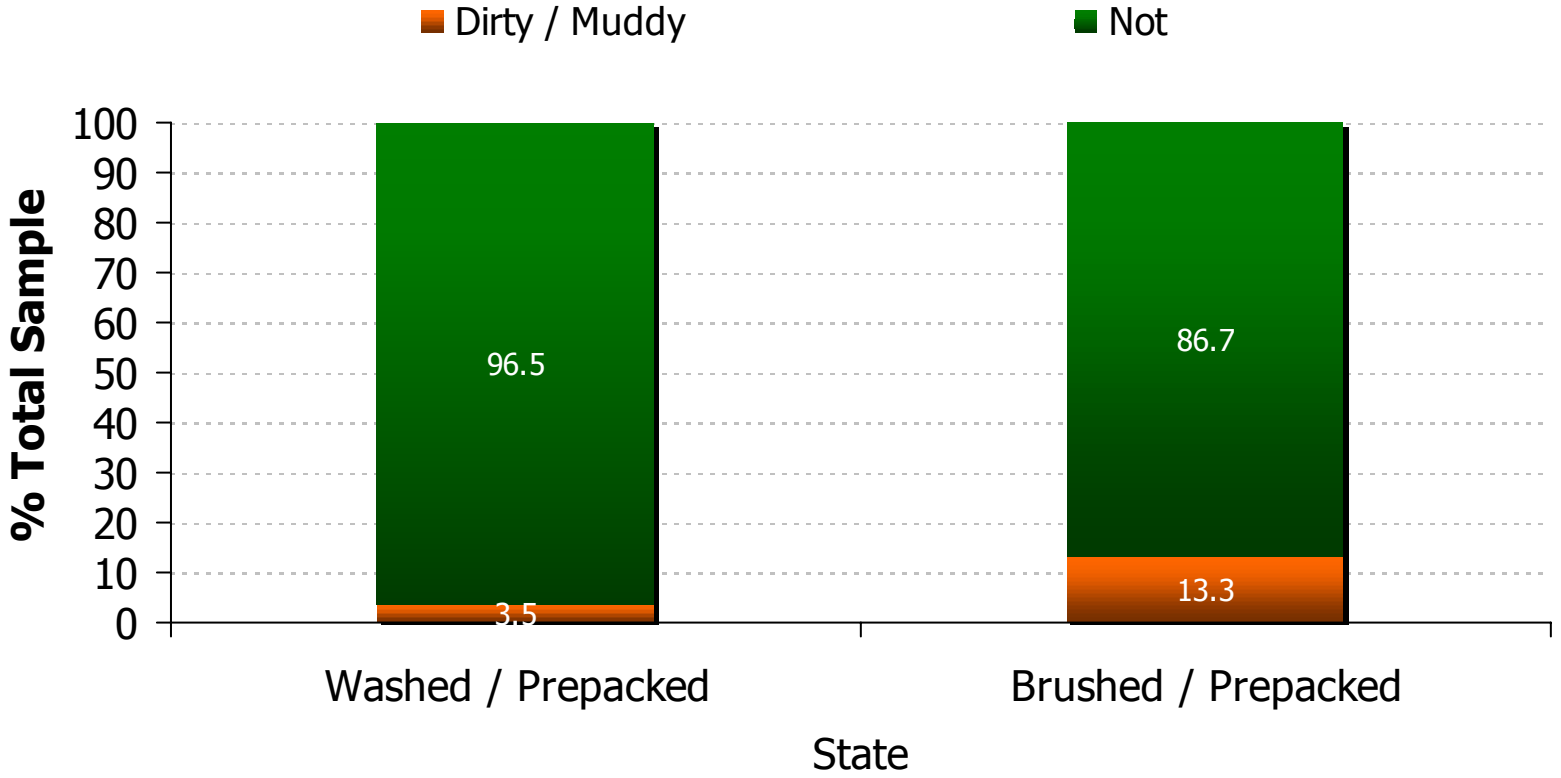
By Style / Pack





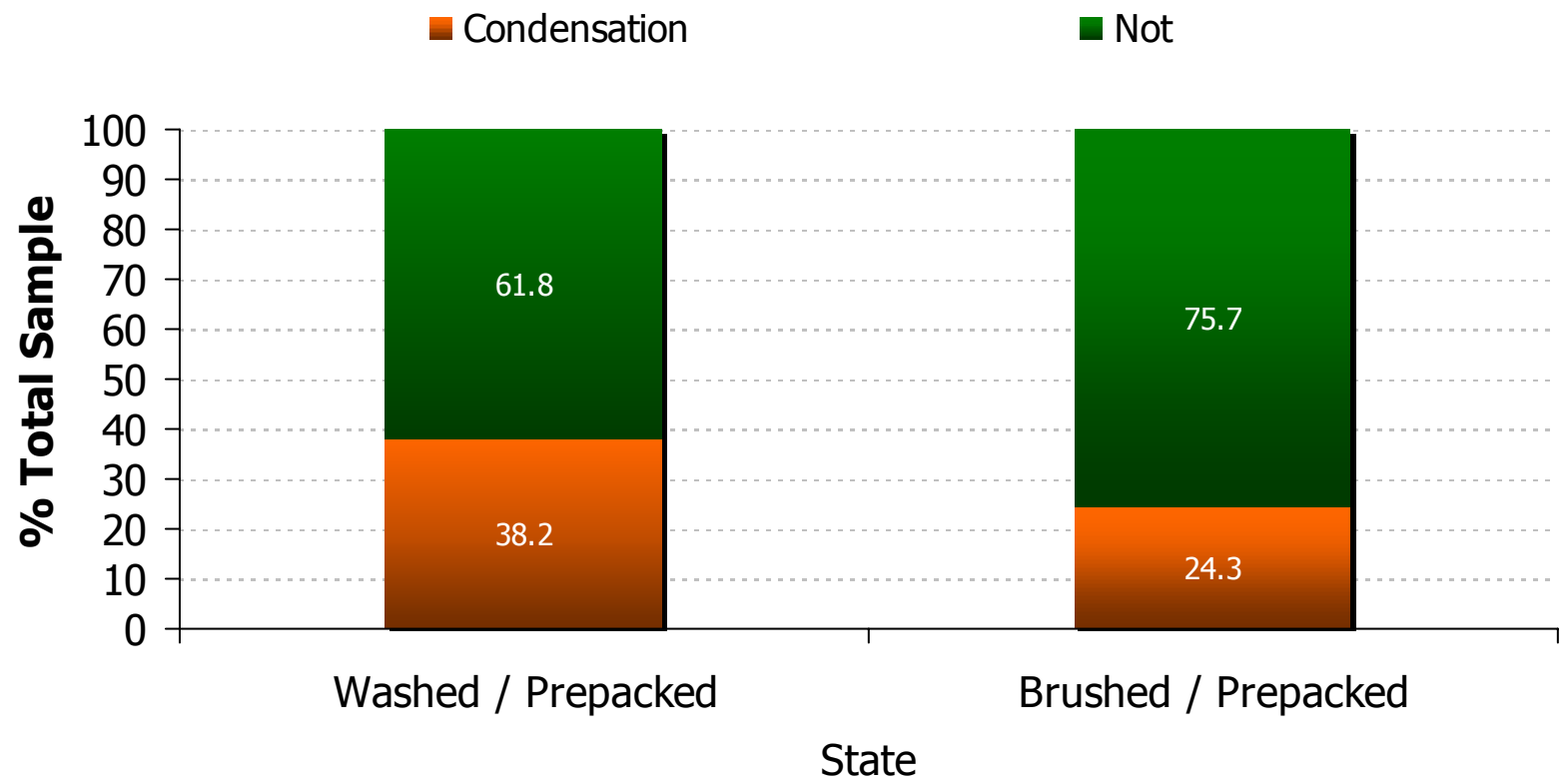
Appearance of Bag

By Style / Pack



Condensation

By Style / Pack

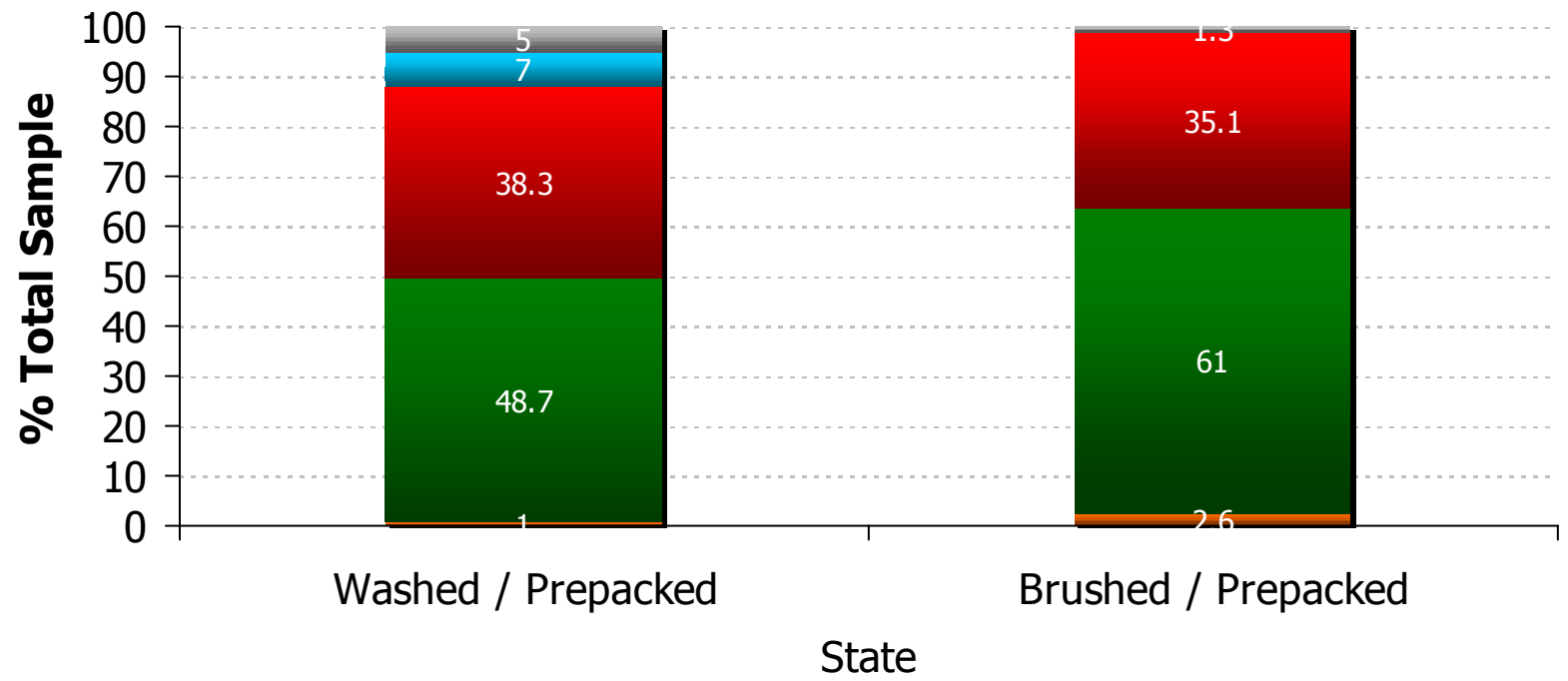


Dampness

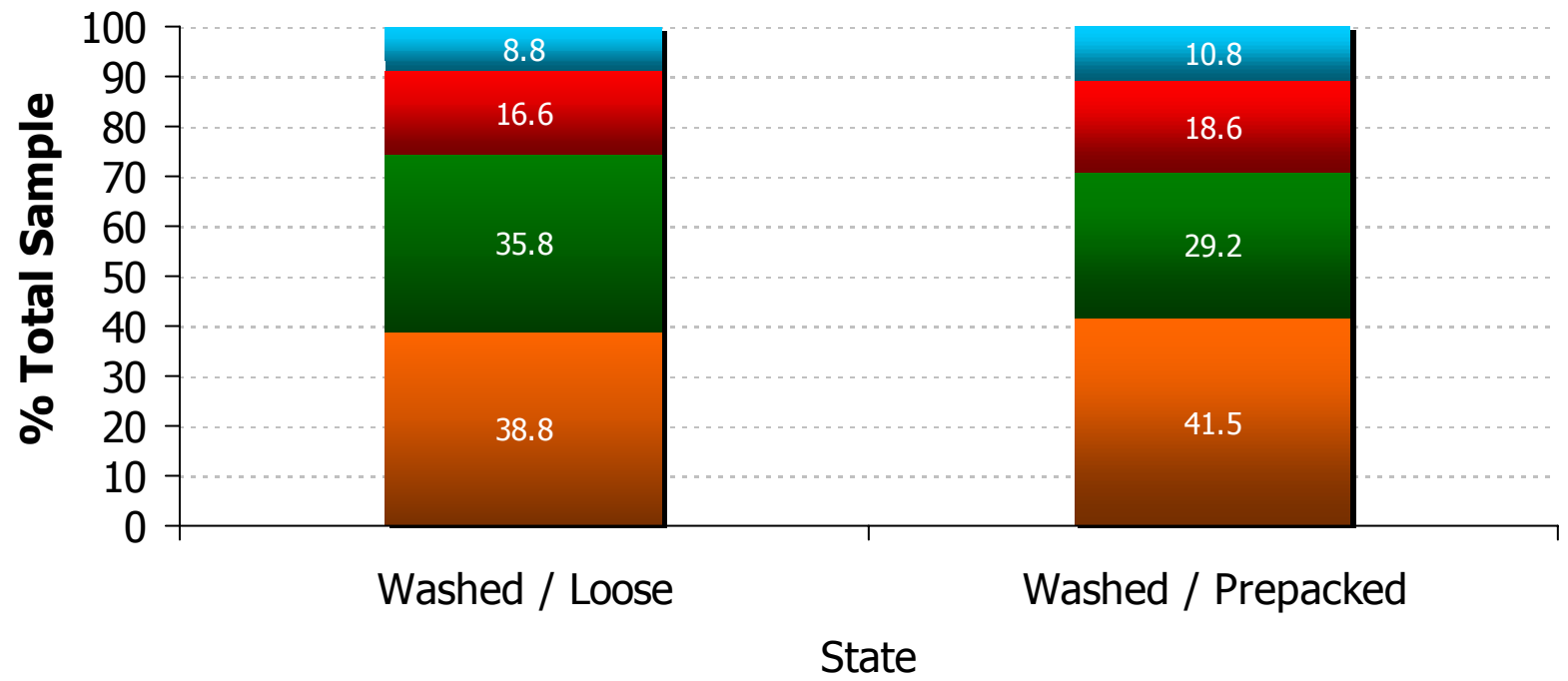
By Style / Pack



■ No ■ Dry ■ Damp ■ Free Moisture ■ Water droplets



- Fresh with surface sheen
- Fresh but no surface sheen
- Slightly dull in appearance
- Strong darkening

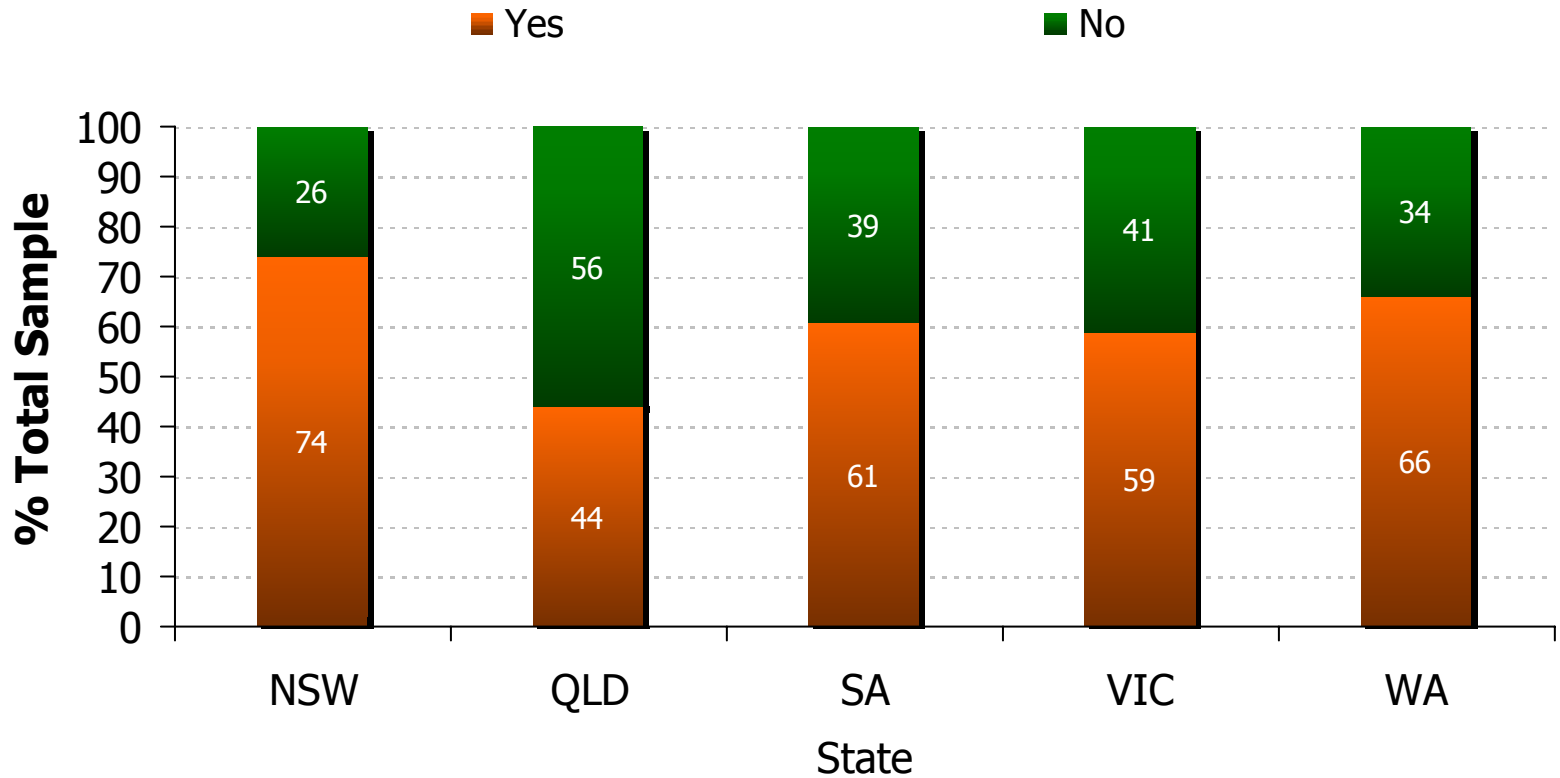


HAL Potato Report

March 2003

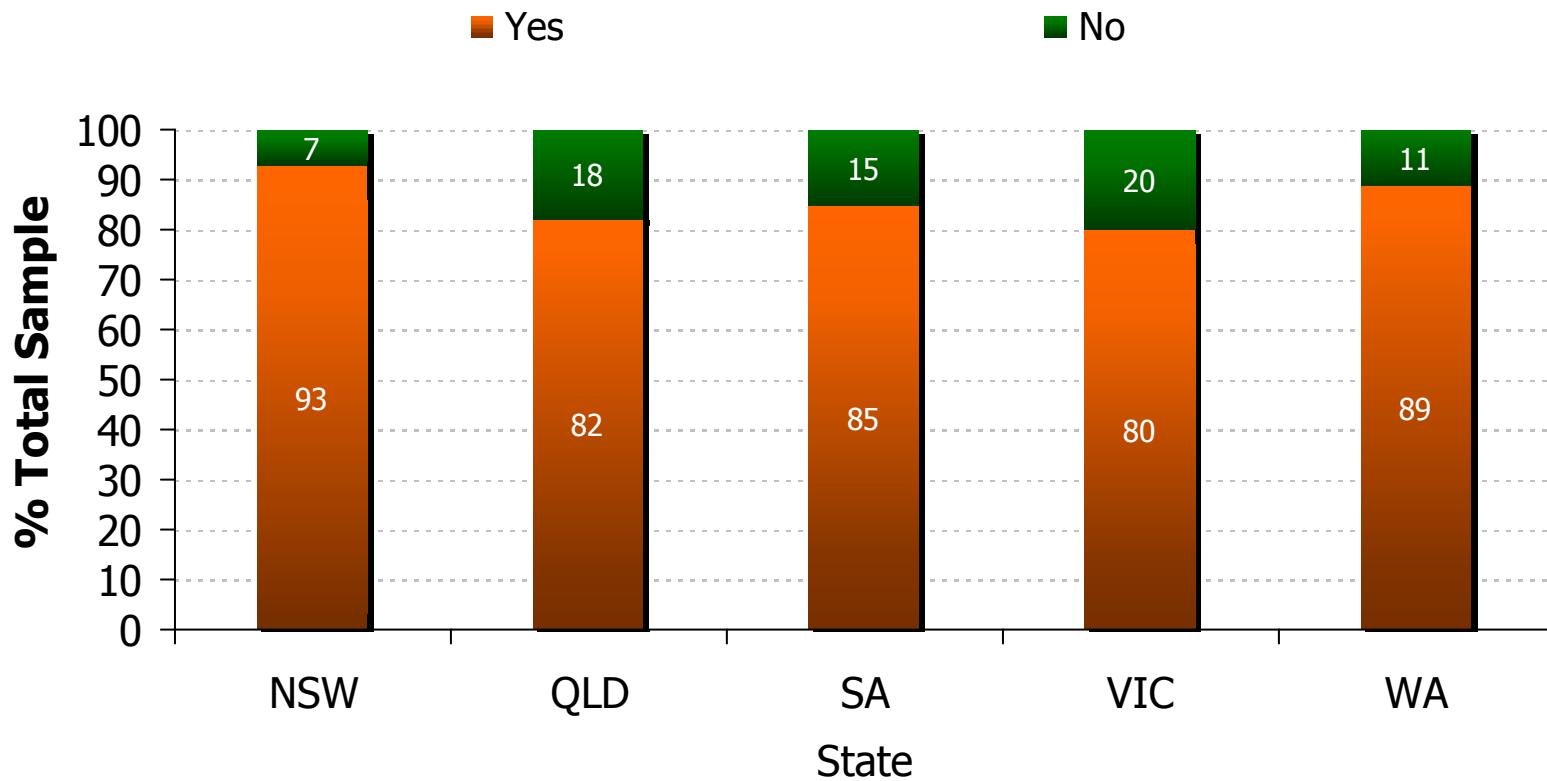
Product Manager Available

By State



Other Staff Available

By State



- State
- Style / Pack

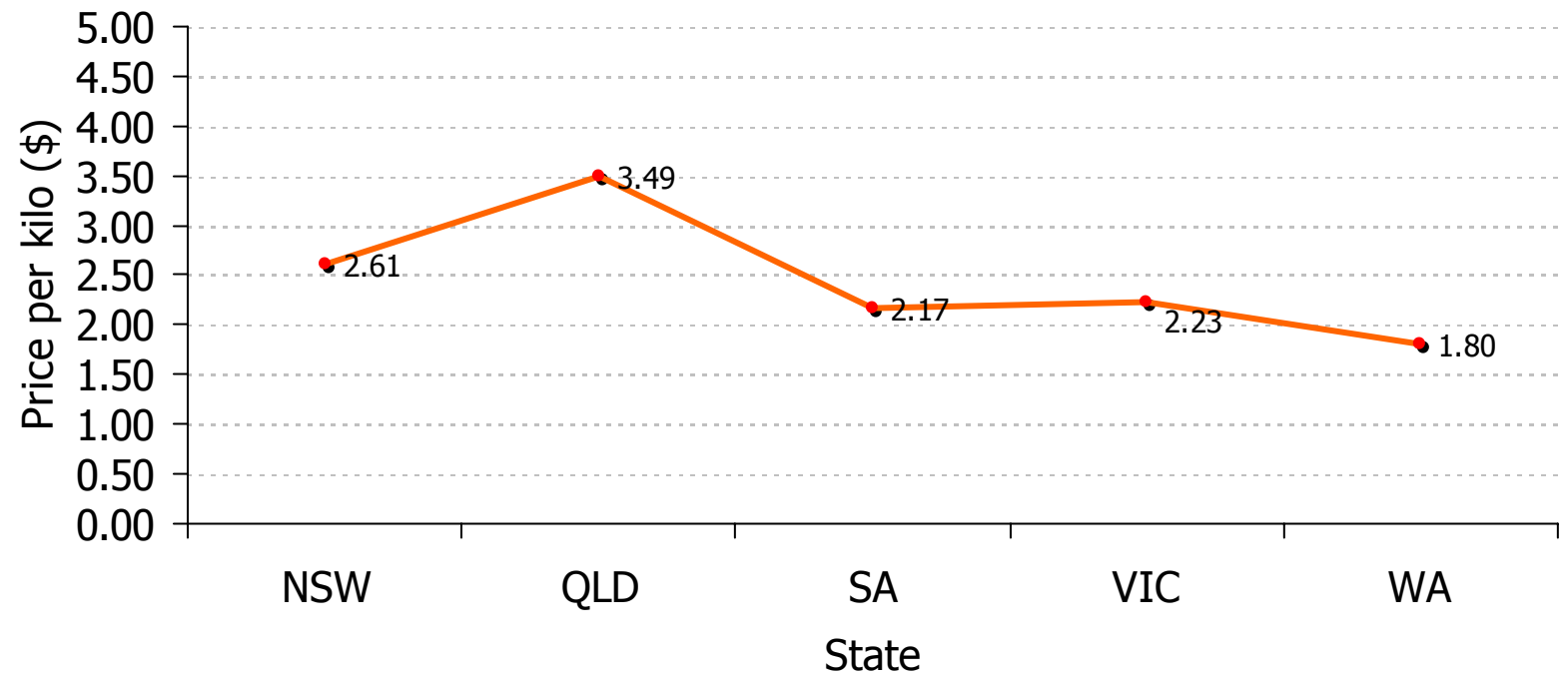
State

Price Per Kilogram

By State (Average)

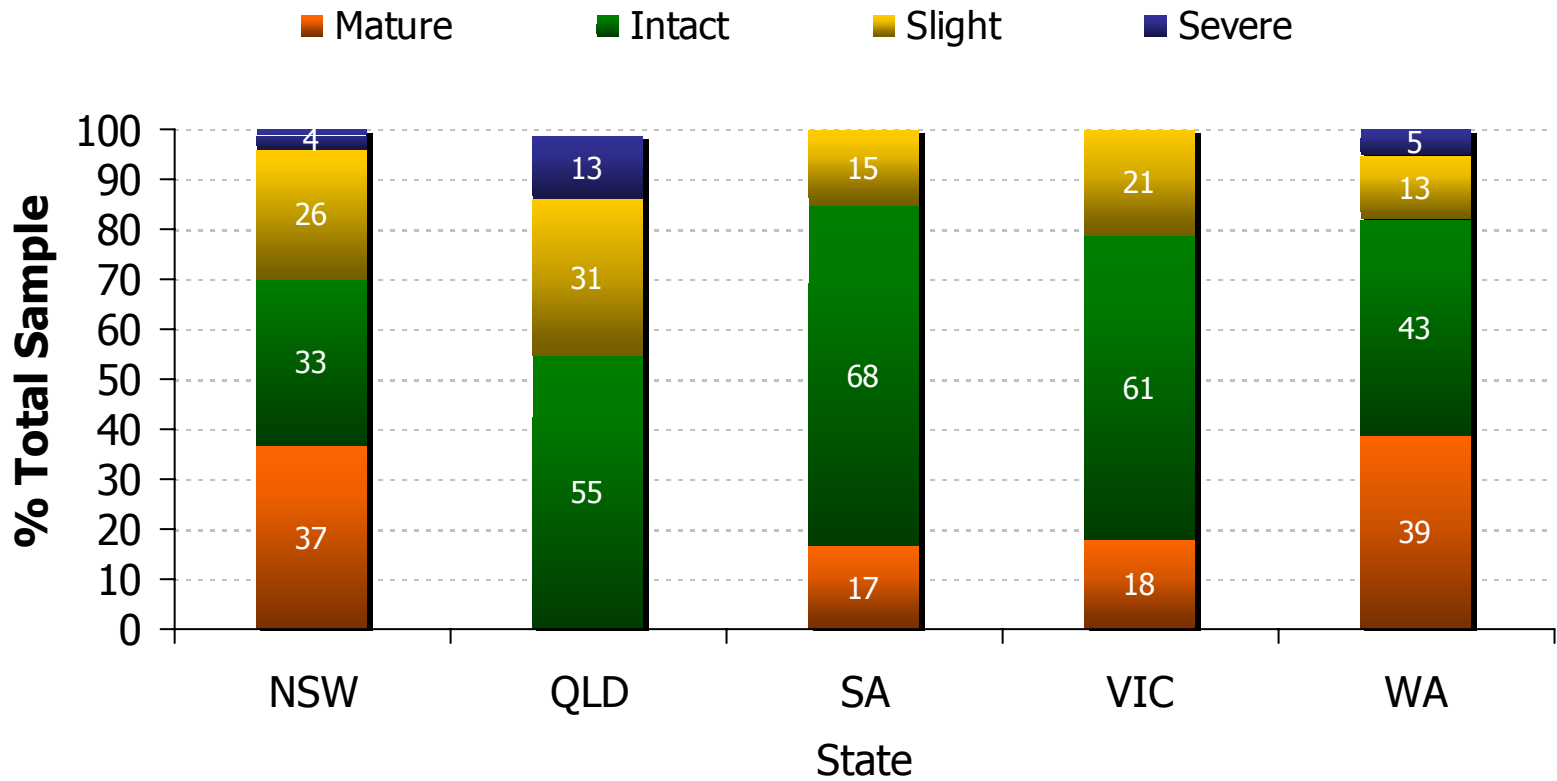


Wave 2



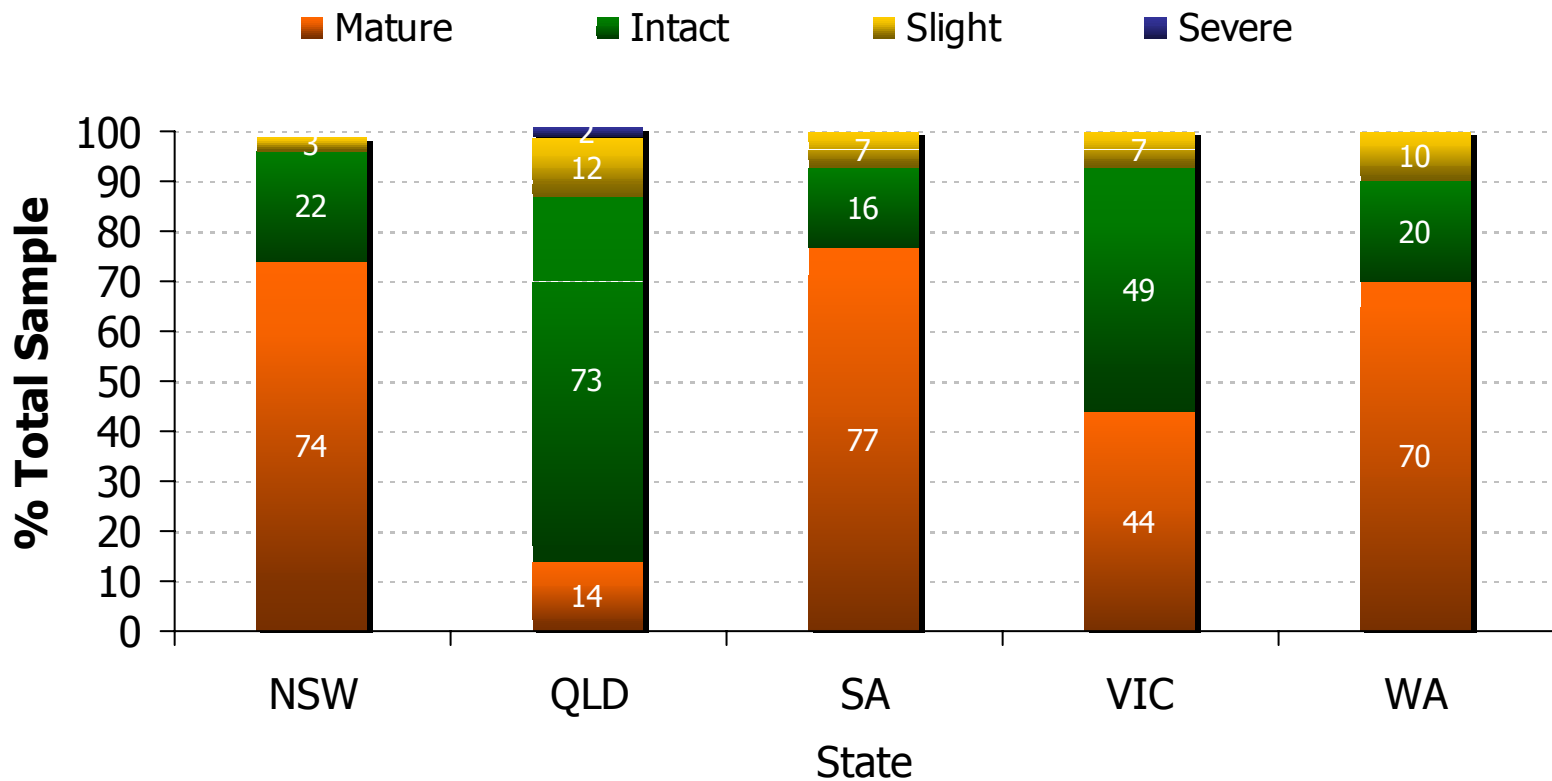
Skinning

By State



Texture

By State

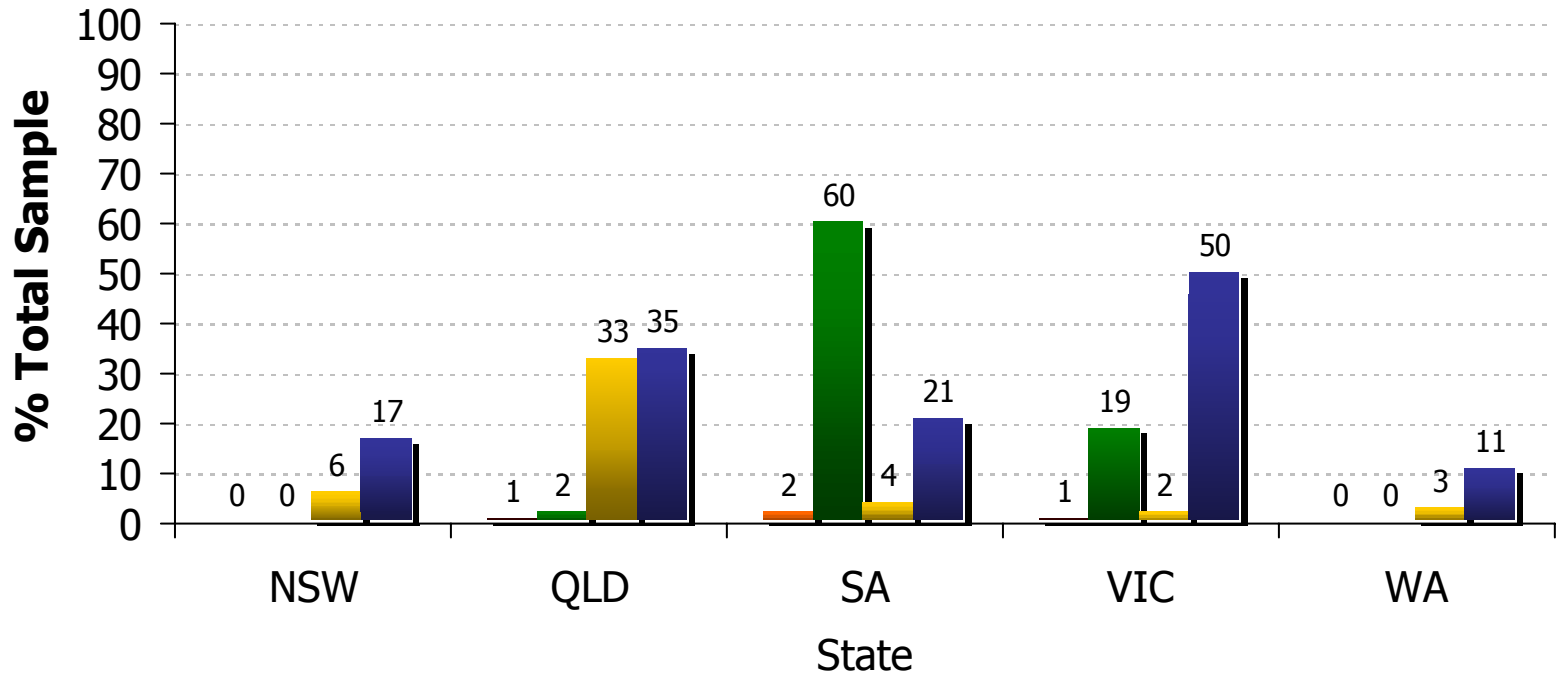


Surface Defects & Damage

By State

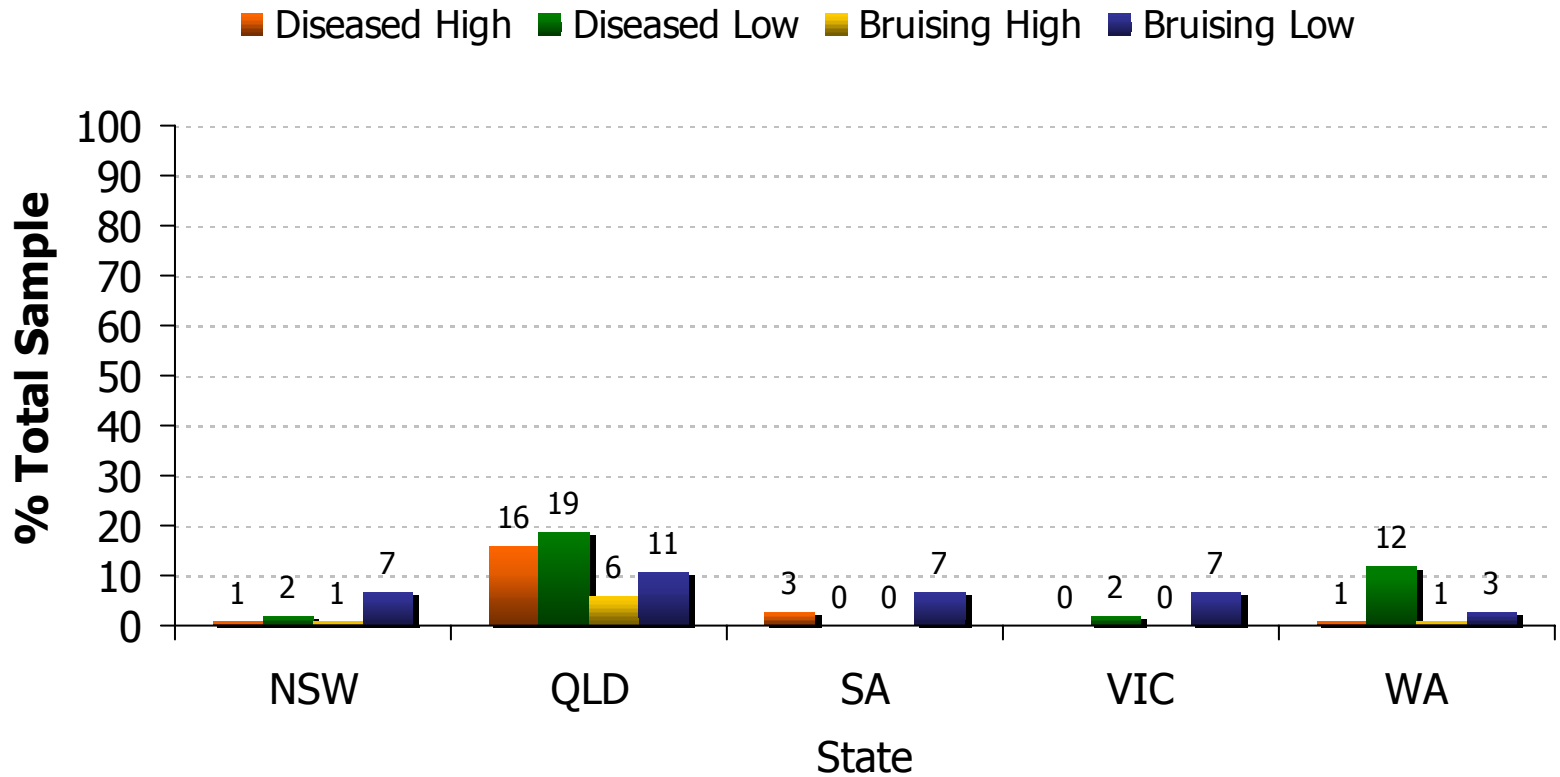


■ Fresh High
 ■ Fresh Low
 ■ Aged High
 ■ Aged Low



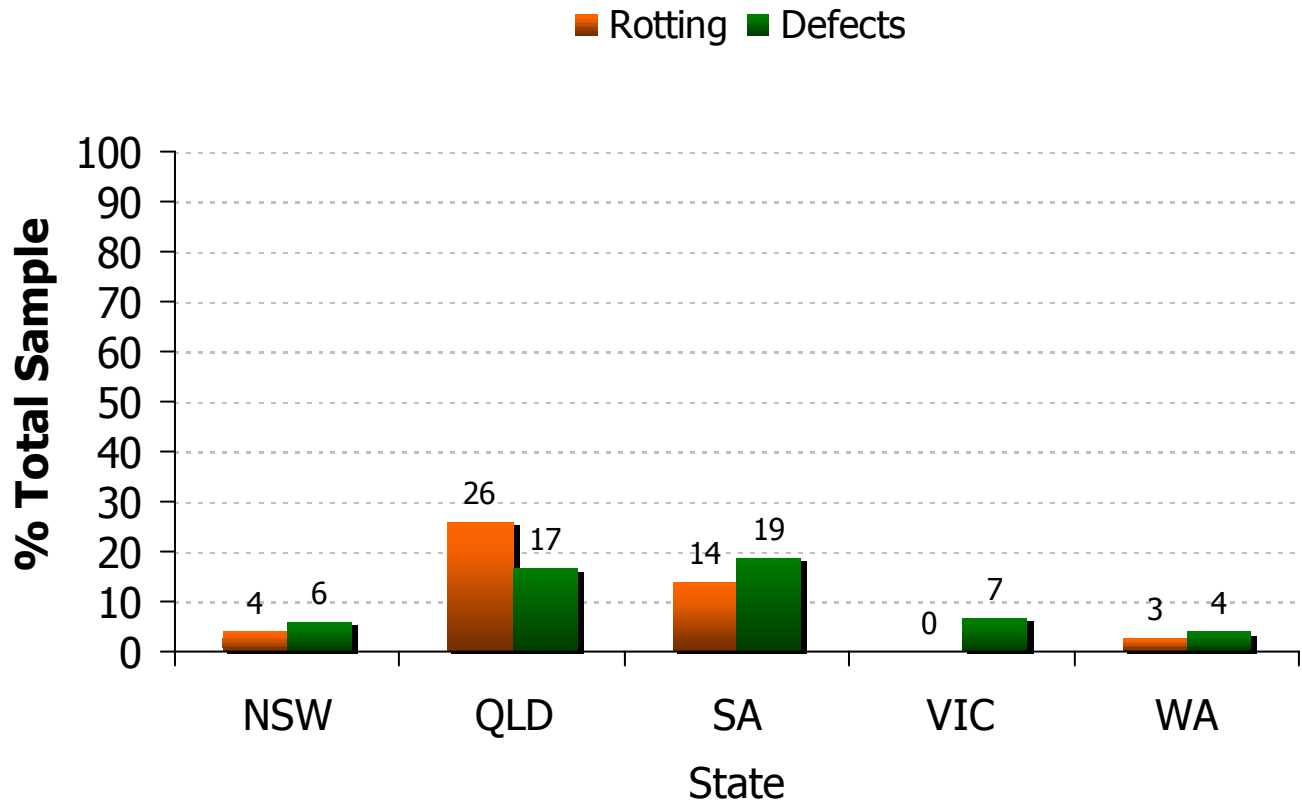
Surface Defects & Damage

By State



Rotting / Defects

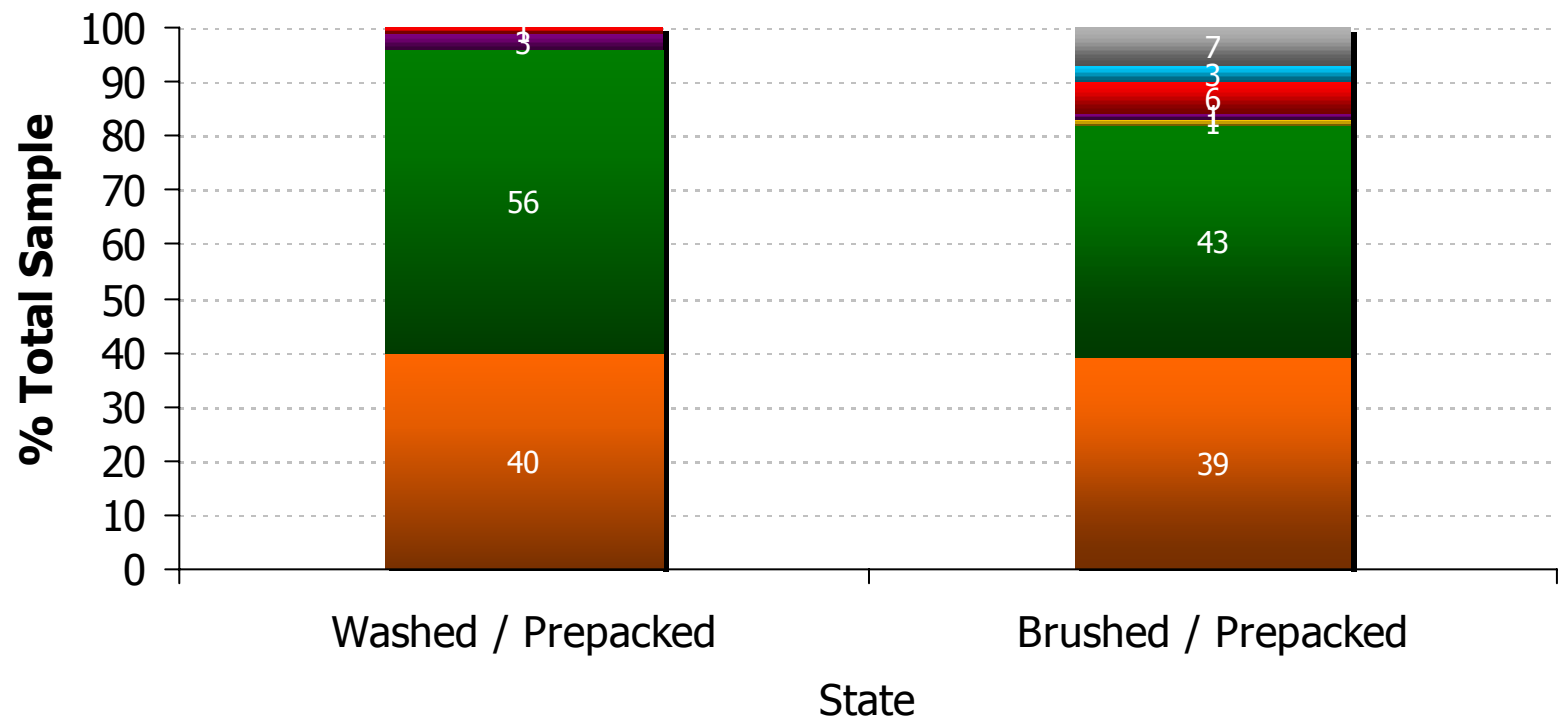
By State



Bag Type

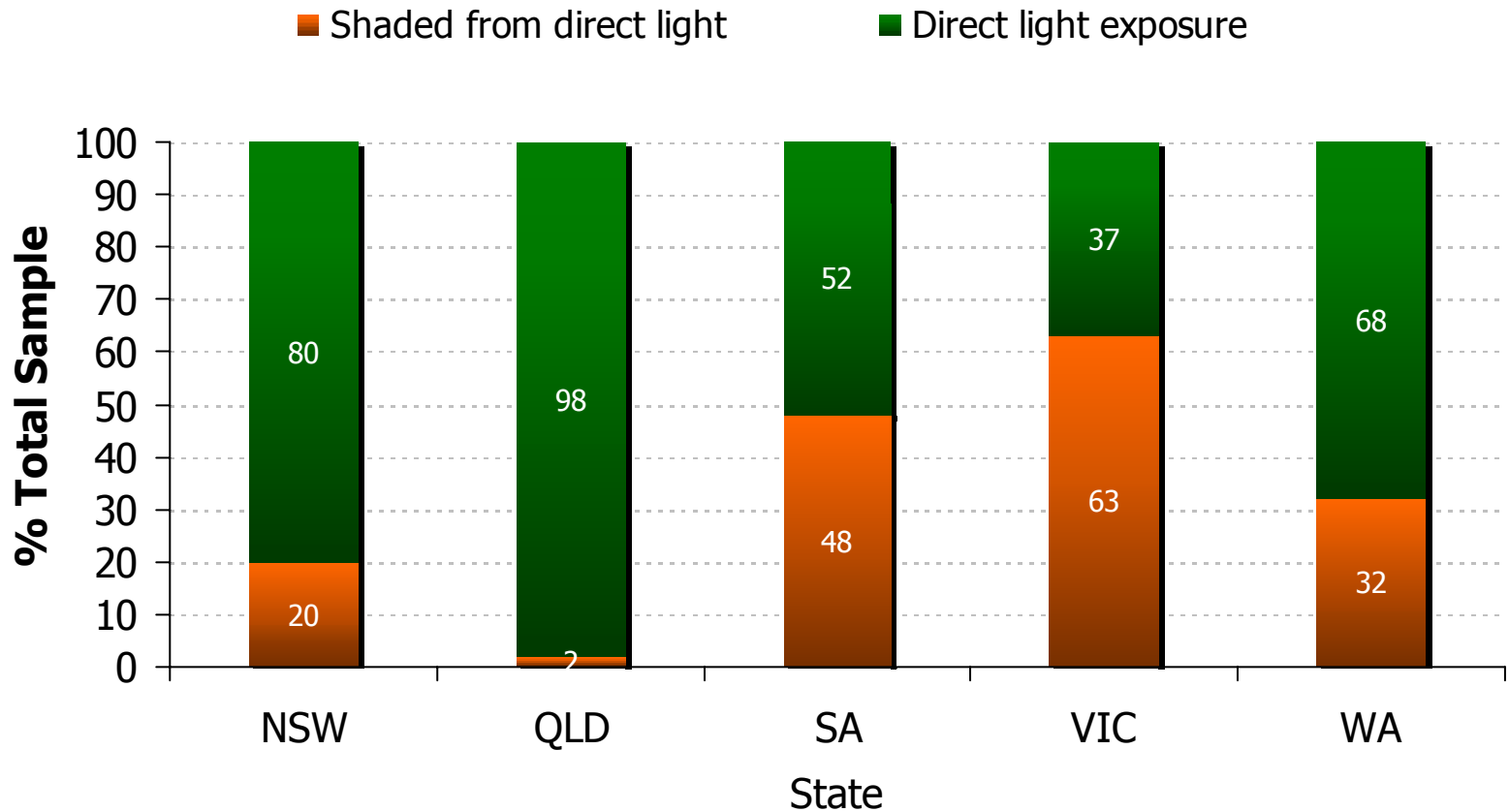
By Style / Pack

- Ventilated clear plastic
- Ventilated colour plastic
- Non ventilated clear plastic
- Non ventilated colour plastic
- Net bag
- Paper bag
- Carton
- Other



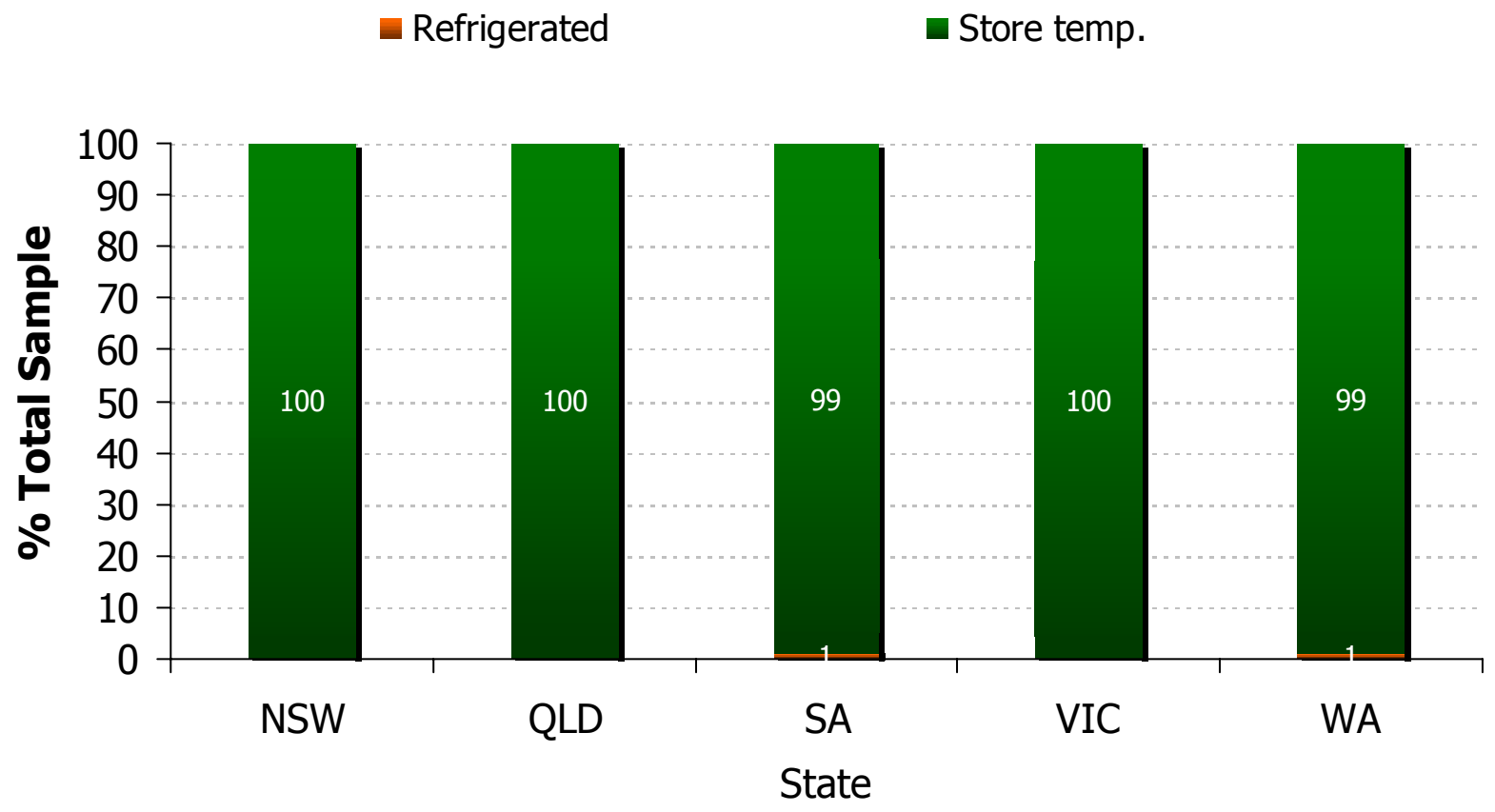
Display Exposure

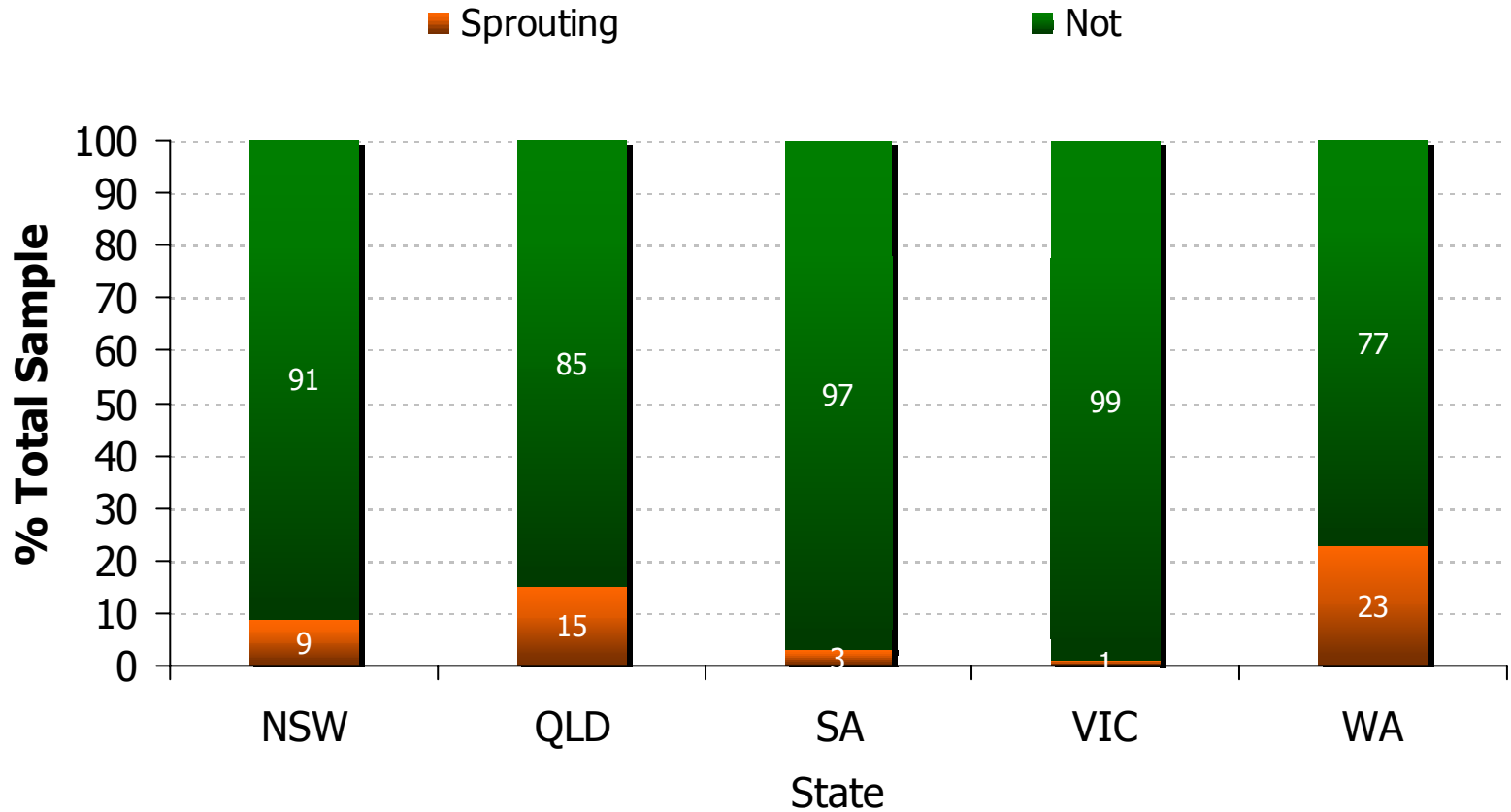
By State



Display Temperature

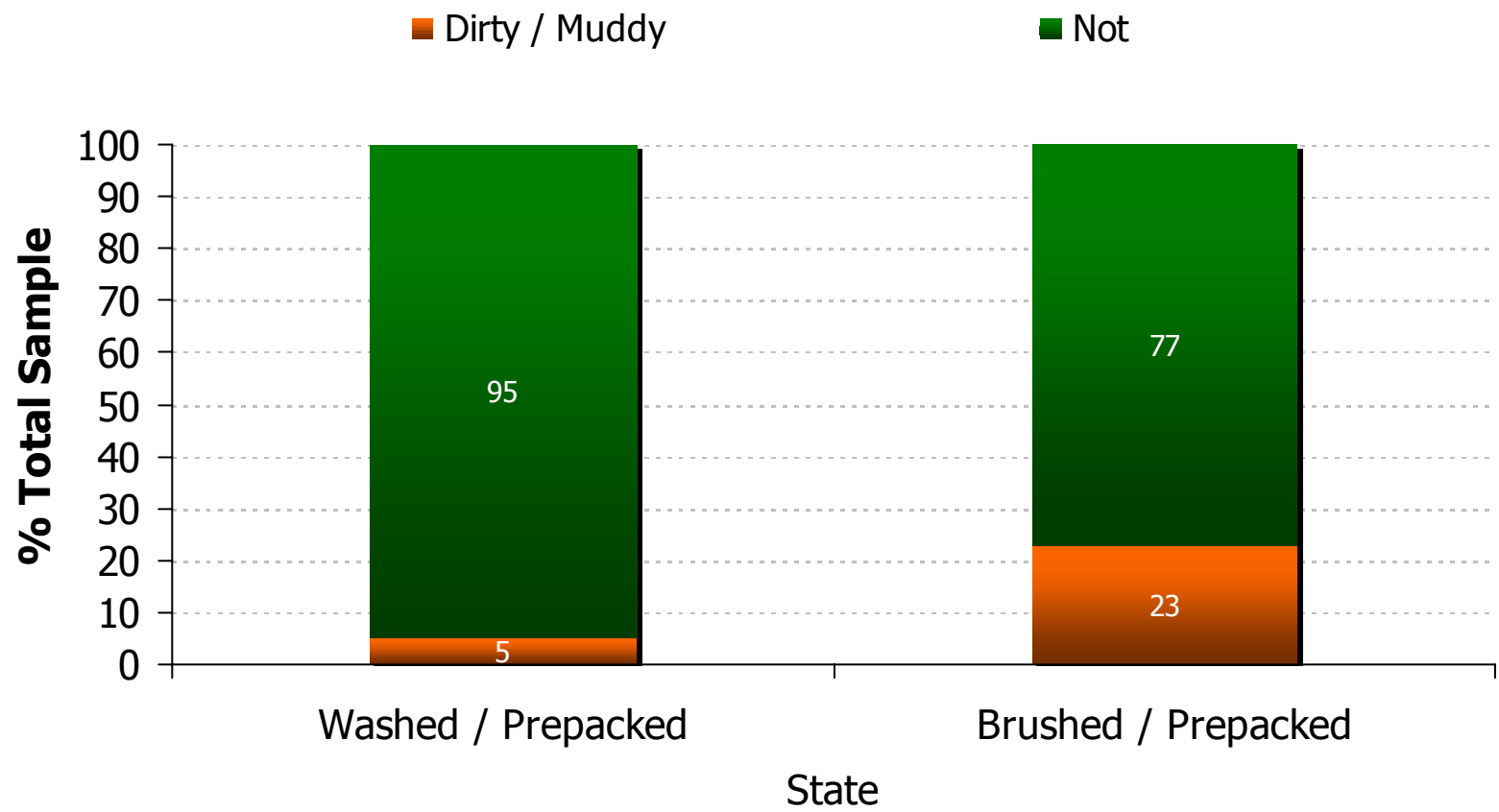
By State





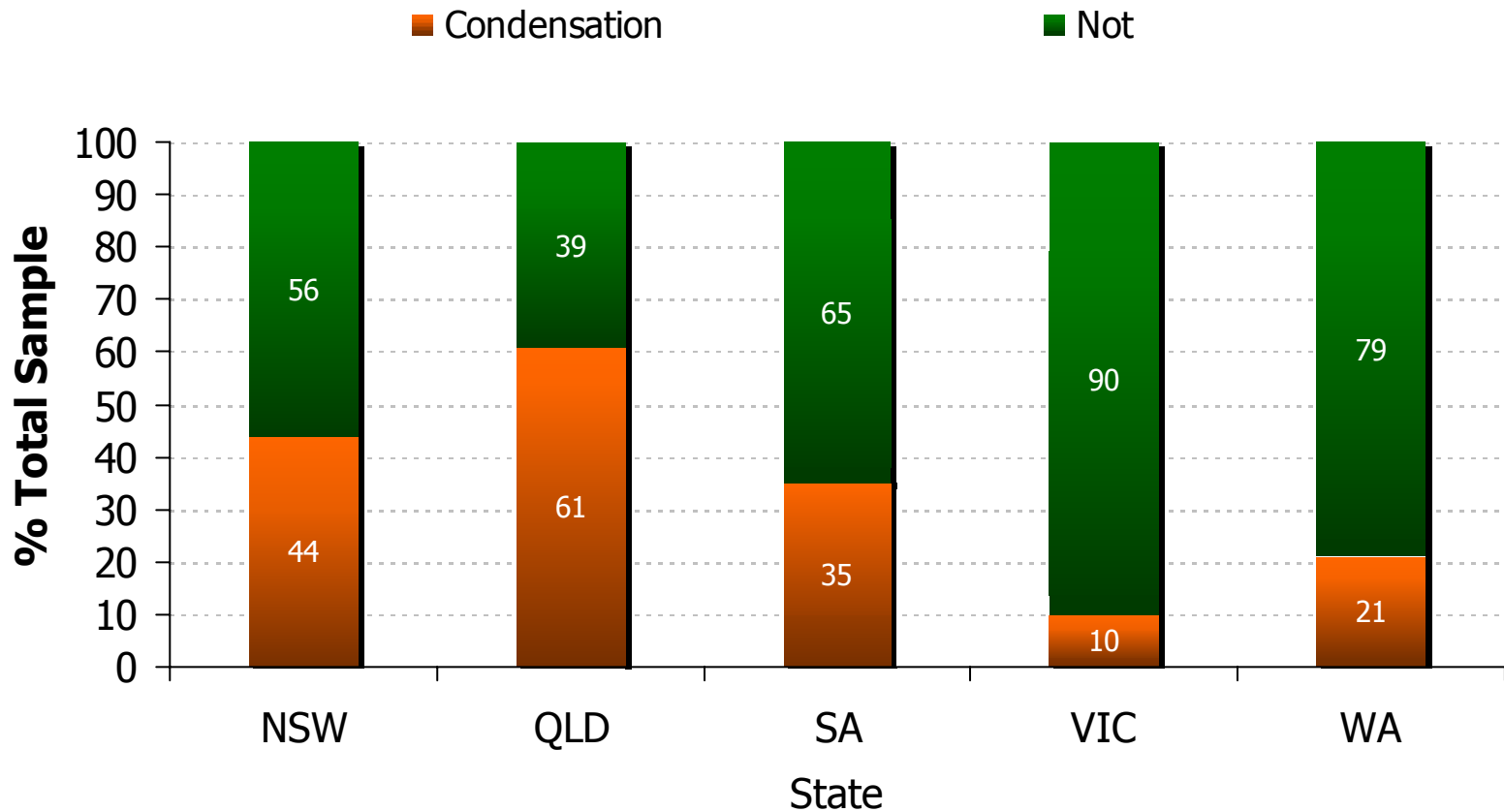
Appearance of Bag

By Style / Pack



Condensation

By State

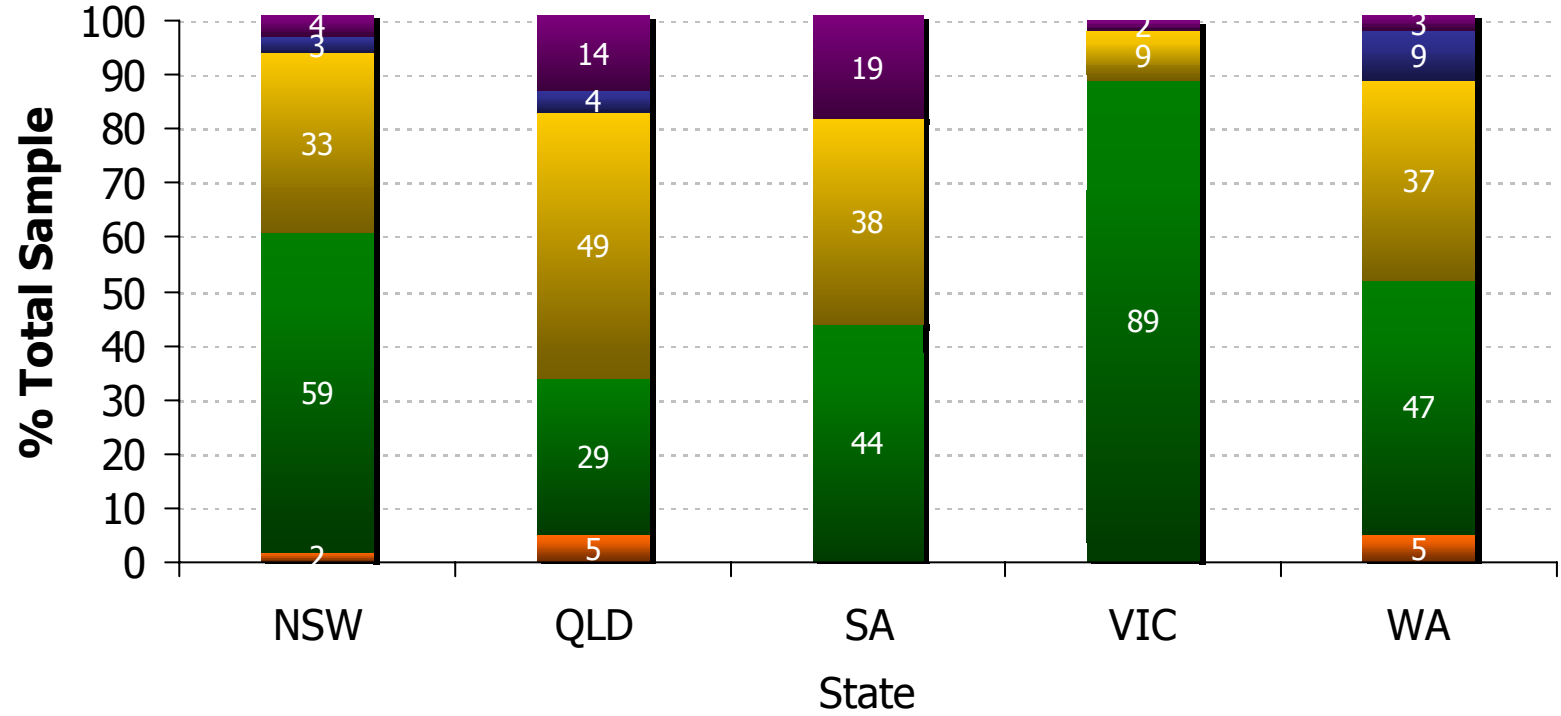


Dampness

By State



■ No
 ■ Dry
 ■ Damp
 ■ Free Moisture
 ■ Water droplets

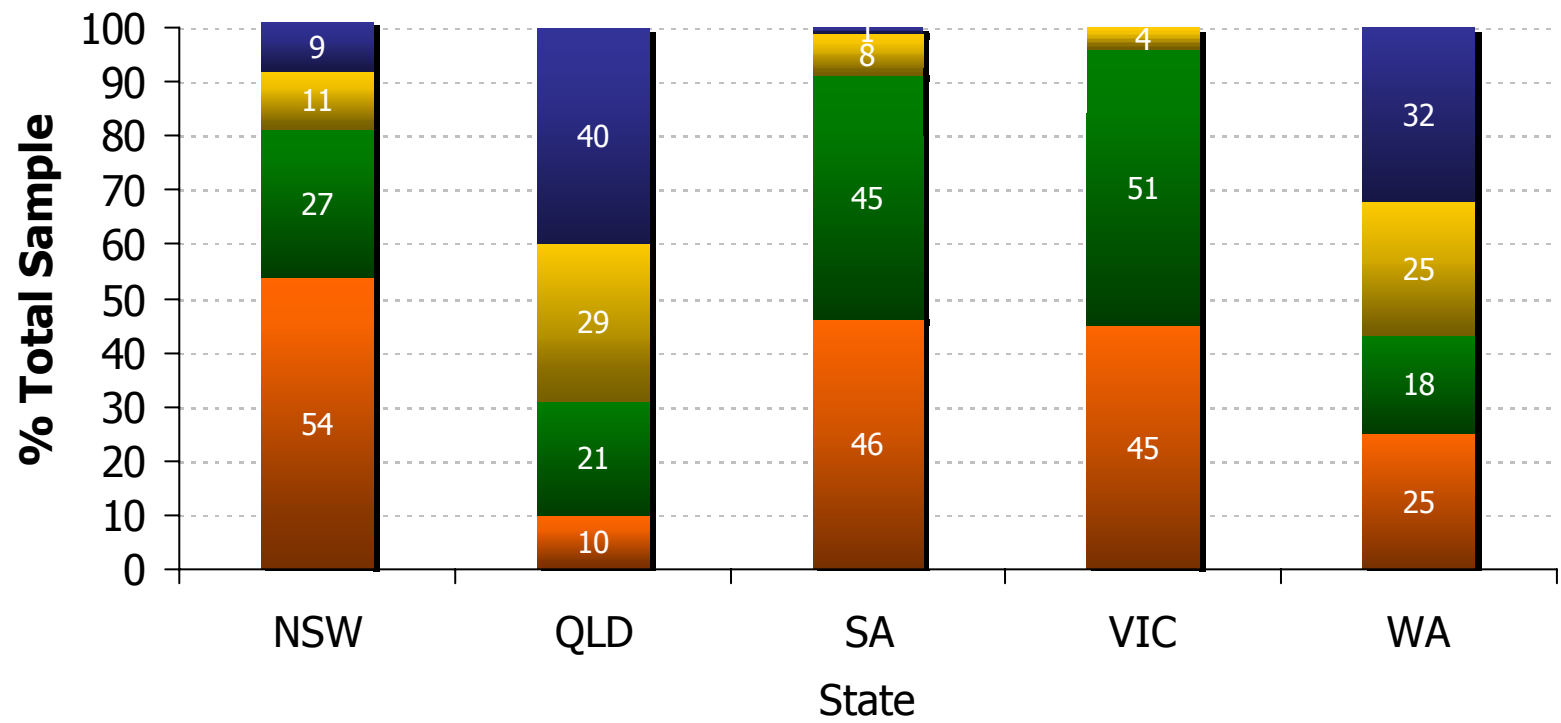


Brightness

By State



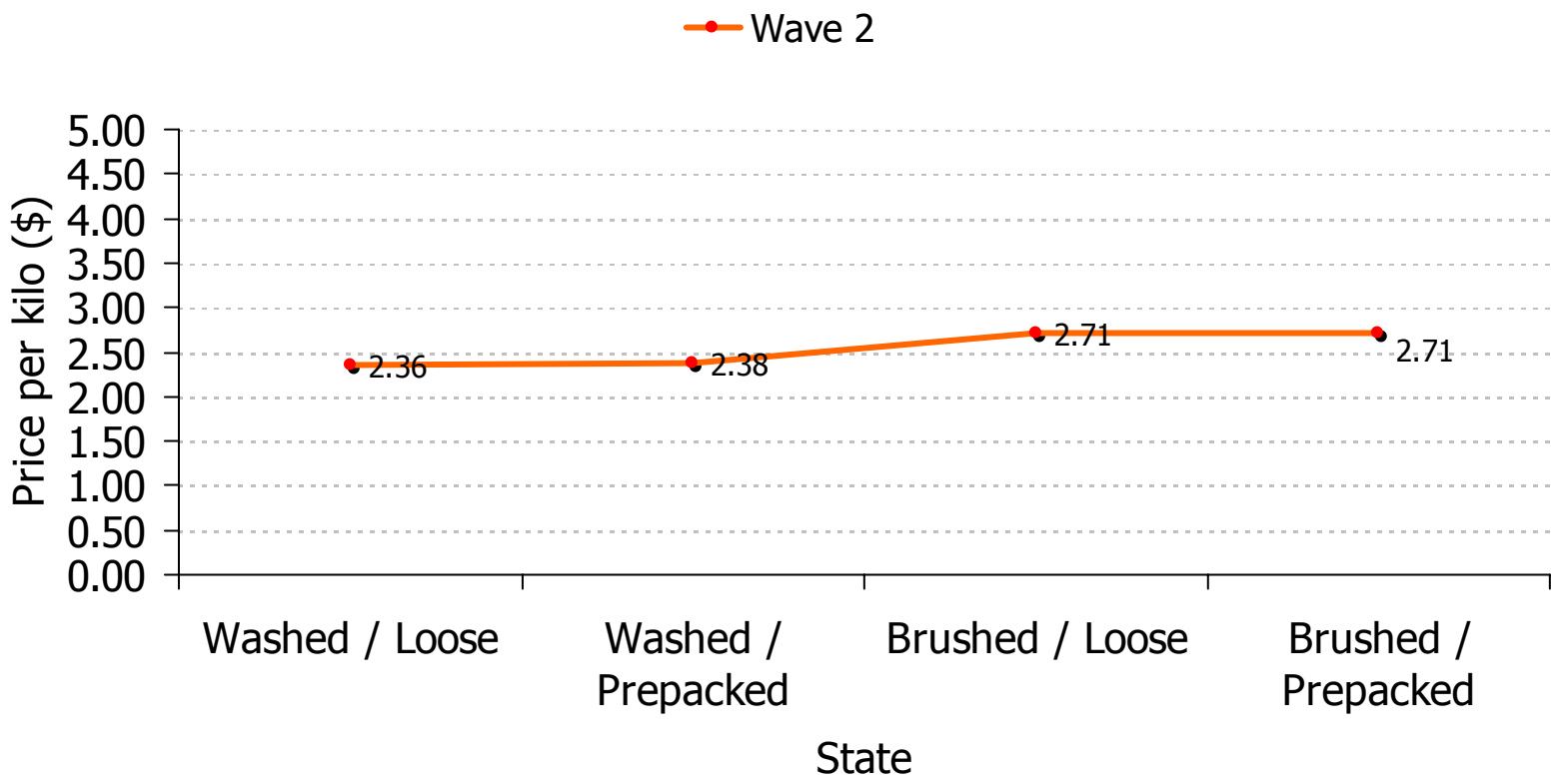
- Fresh with surface sheen
- Fresh but no surface sheen
- Slightly dull in appearance
- Strong darkening



Style / Pack

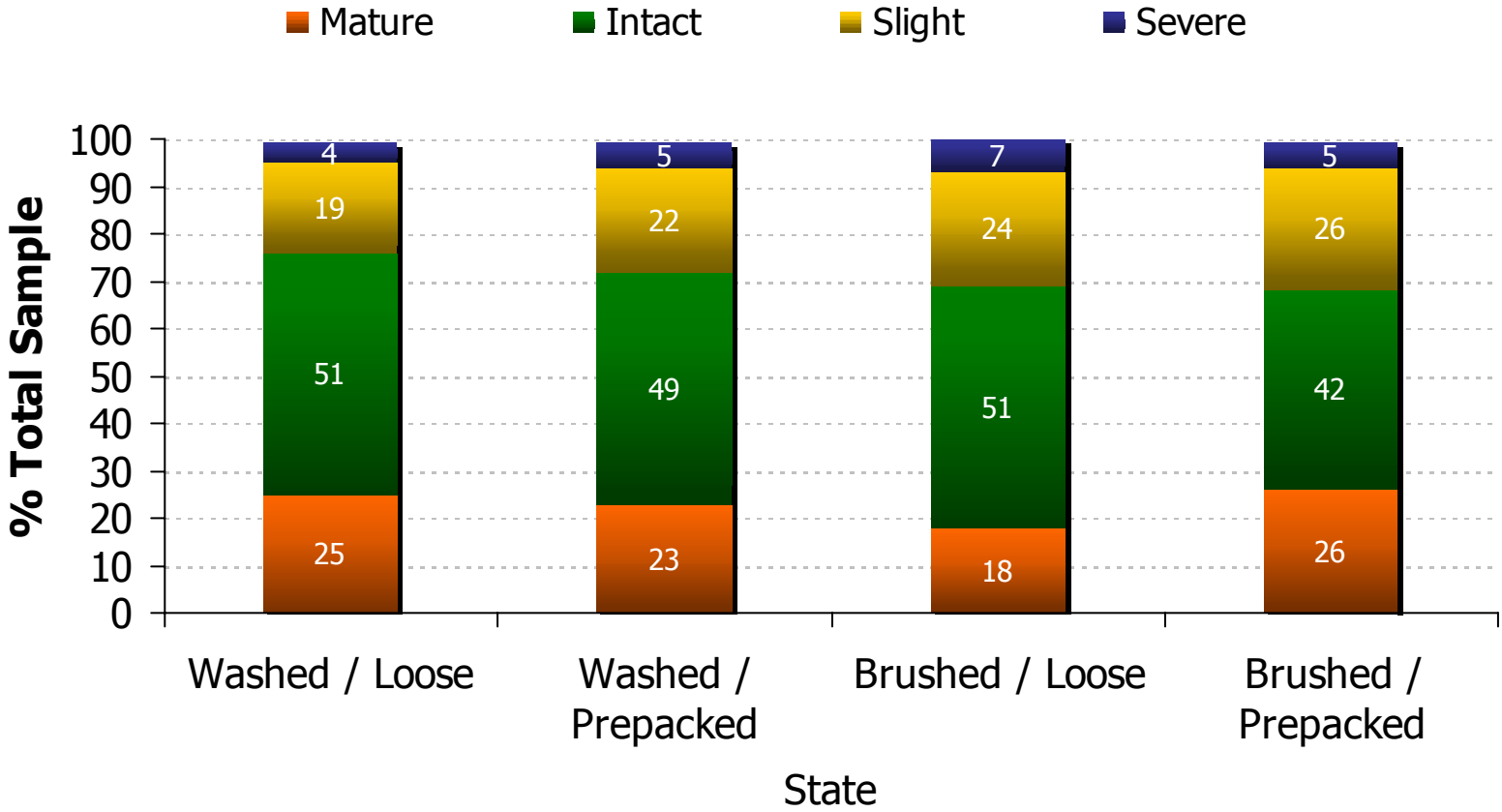
Price Per Kilogram

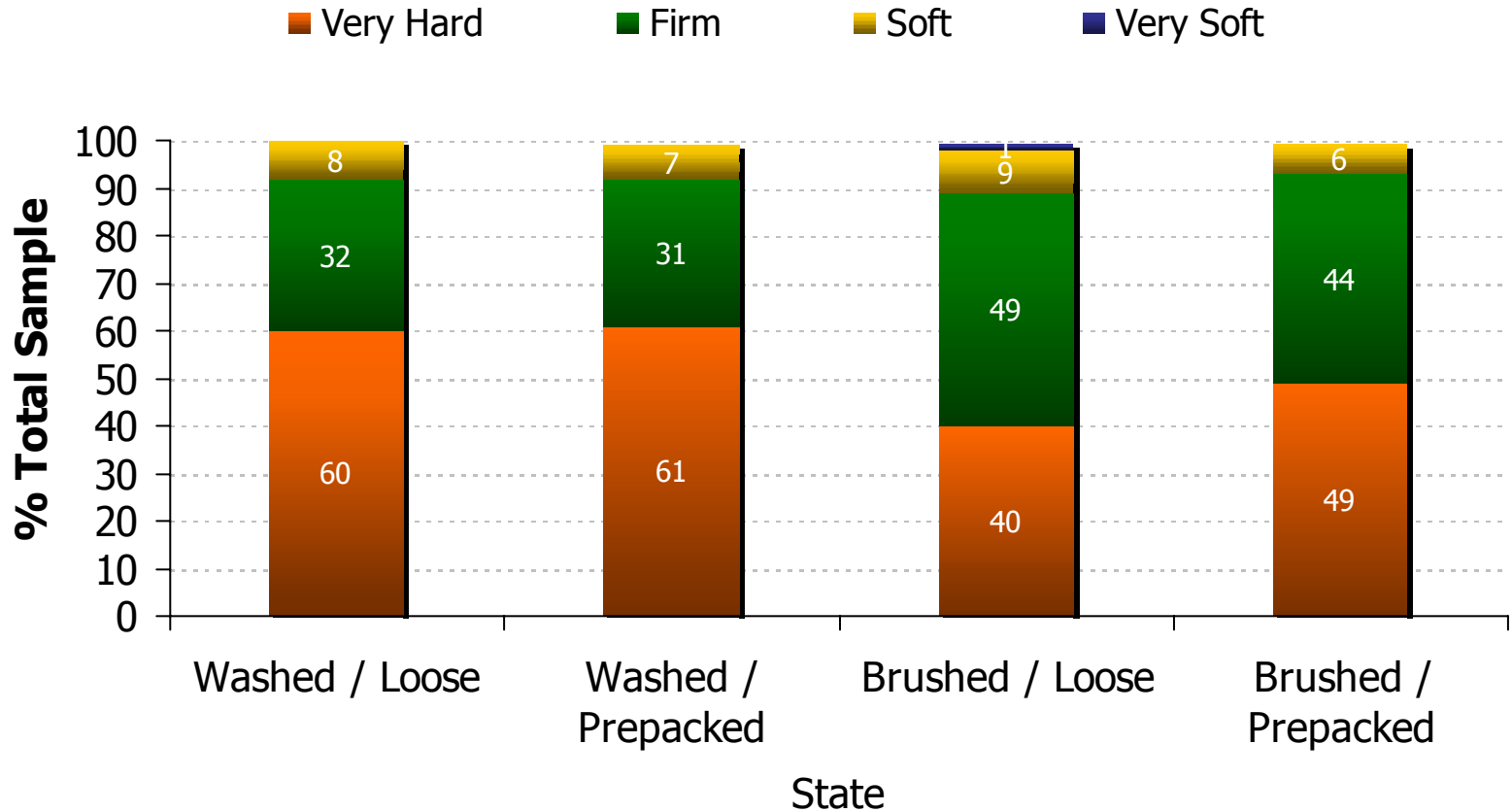
By Style / Pack (Average)



Skinning

By Style / Pack



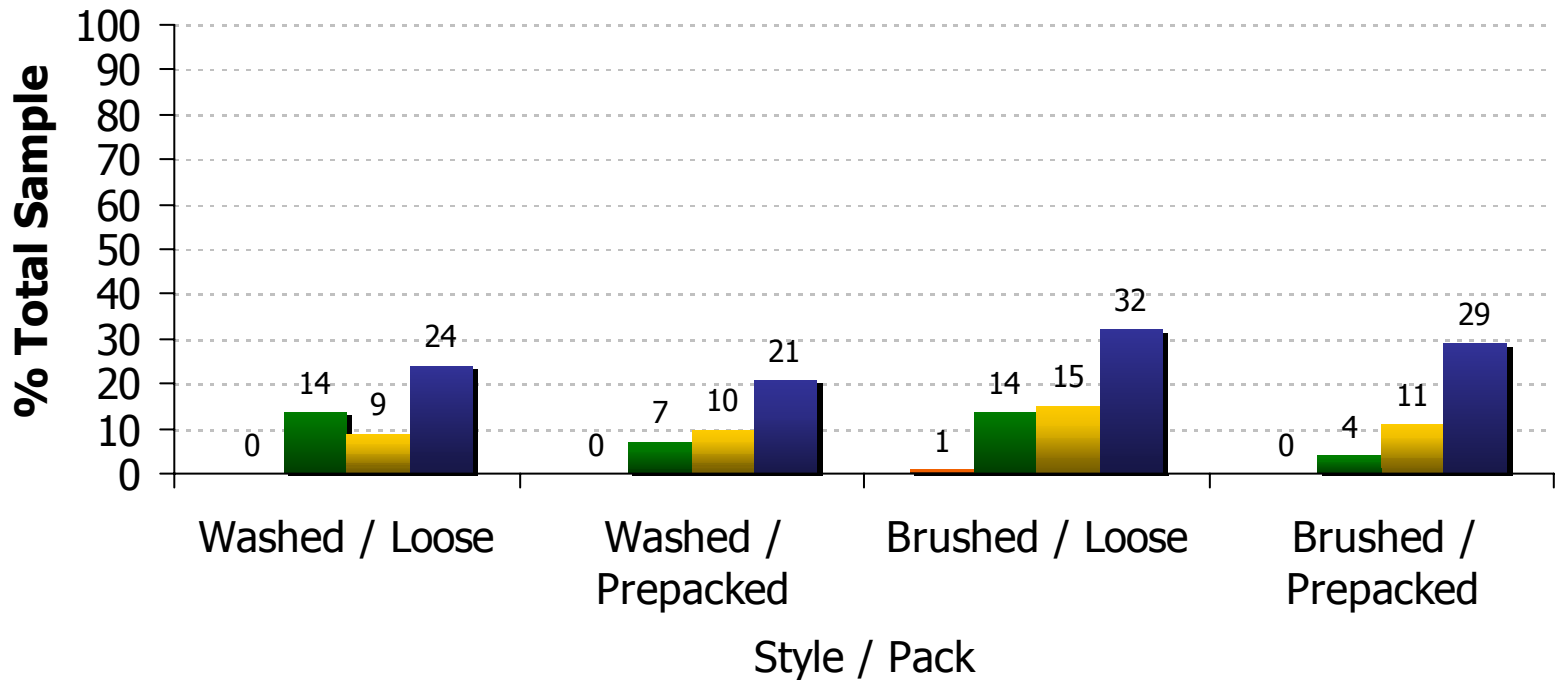


Surface Defects & Damage

By Style / Pack



■ Fresh High
 ■ Fresh Low
 ■ Aged High
 ■ Aged Low

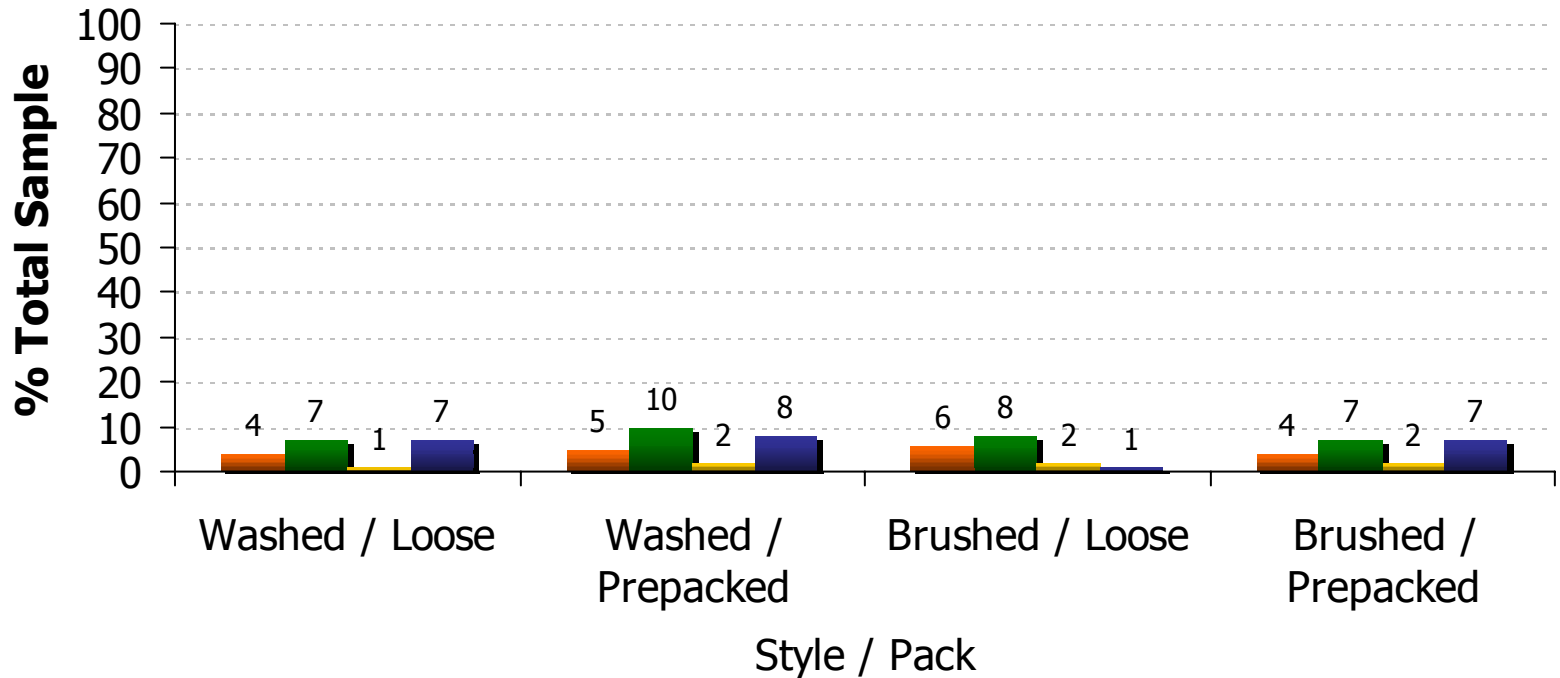


Surface Defects & Damage

By Style / Pack

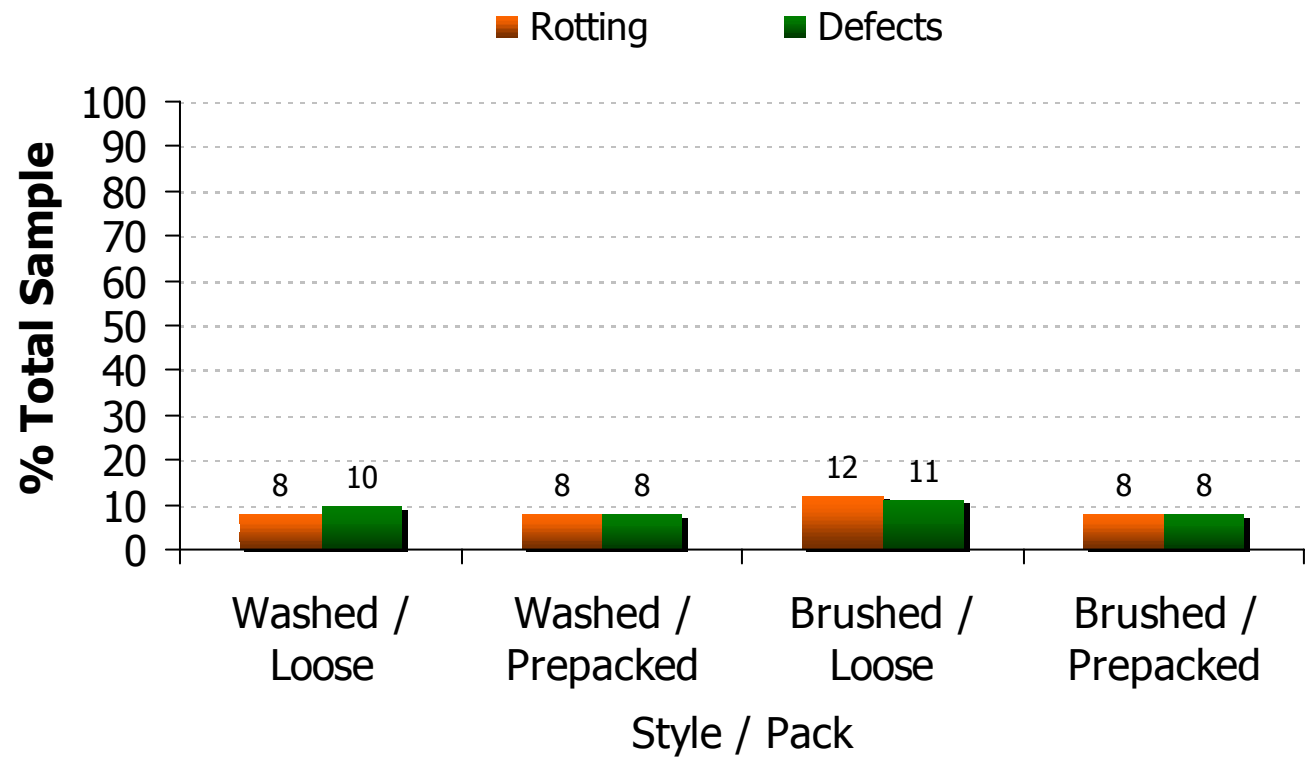


■ Diseased High
 ■ Diseased Low
 ■ Bruising High
 ■ Bruising Low



Rotting / Defects

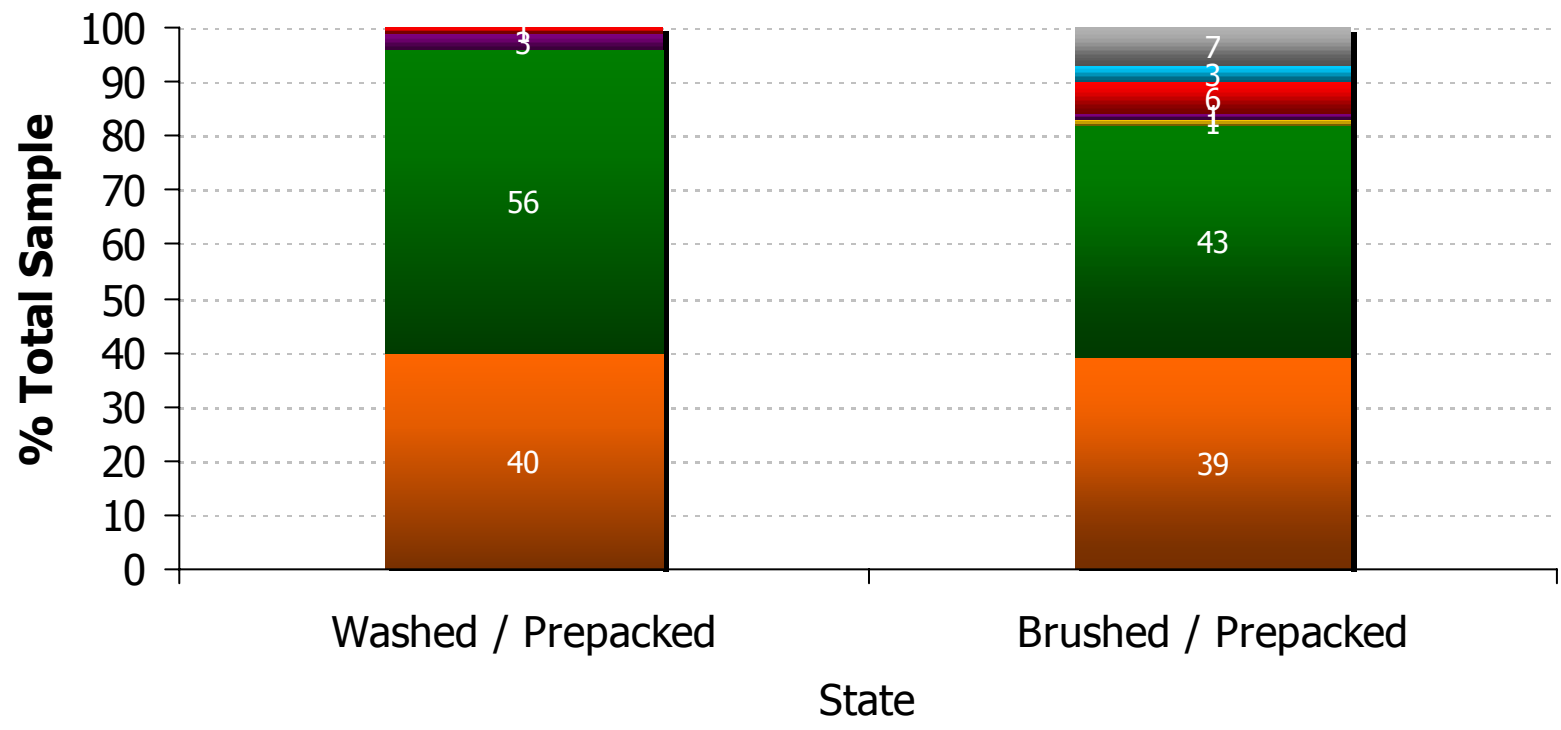
By Style / Pack



Bag Type

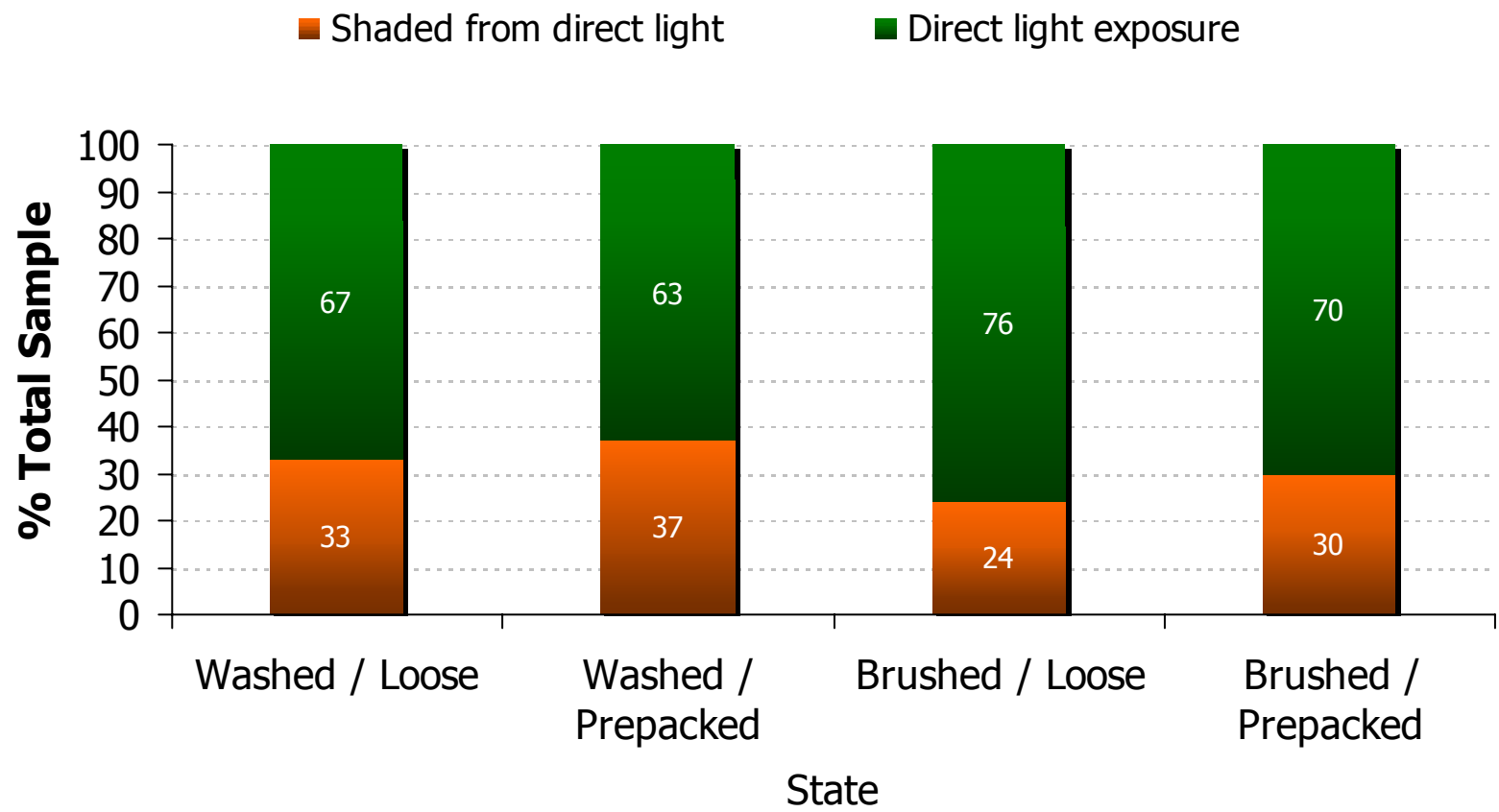
By Style / Pack

- Ventilated clear plastic
- Ventilated colour plastic
- Non ventilated clear plastic
- Non ventilated colour plastic
- Net bag
- Paper bag
- Carton
- Other



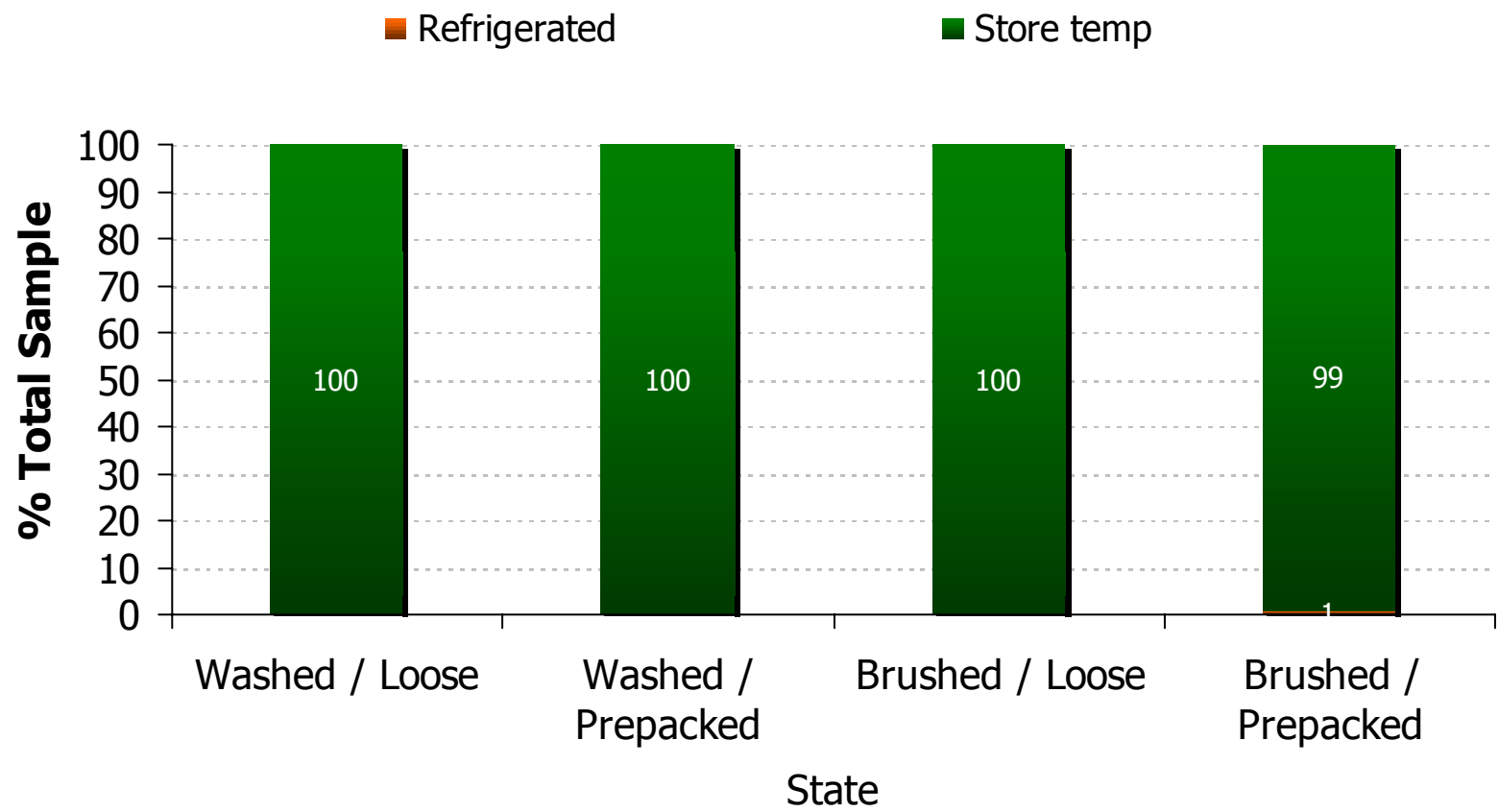
Display Exposure

By Style / Pack



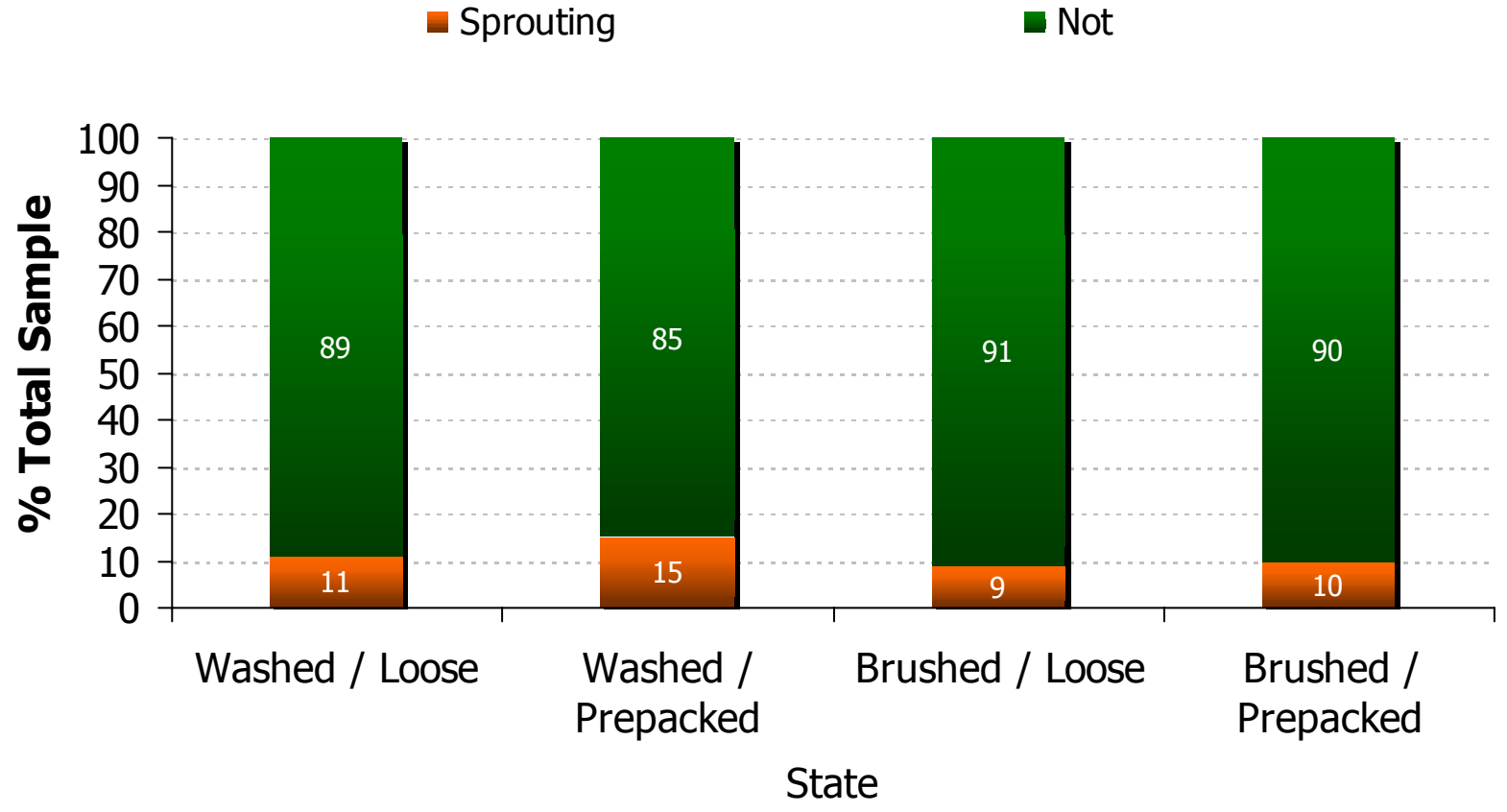
Display Temperature

By Style / Pack



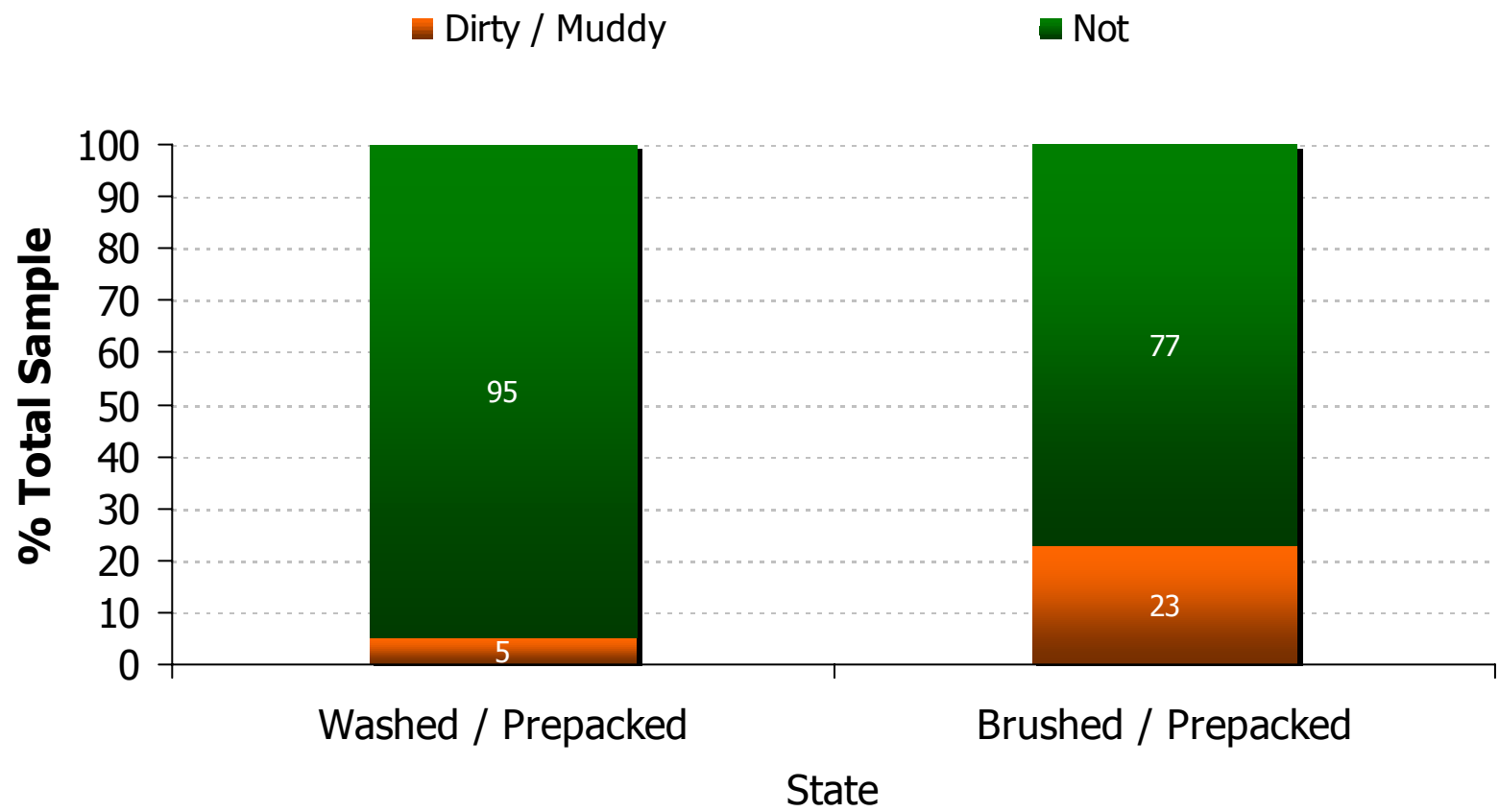
Sprouting

By Style / Pack



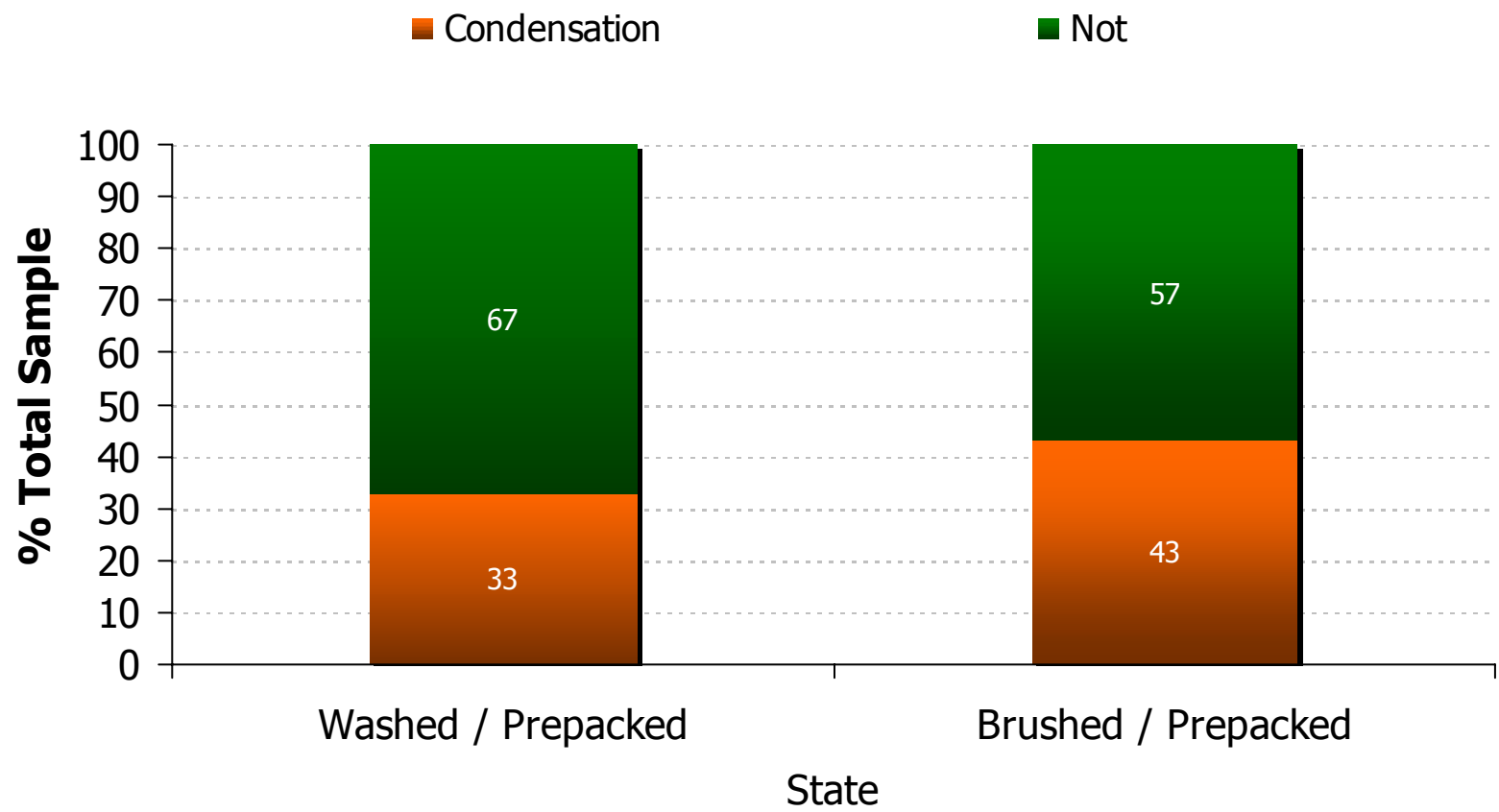
Appearance of Bag

By Style / Pack



Condensation

By Style / Pack

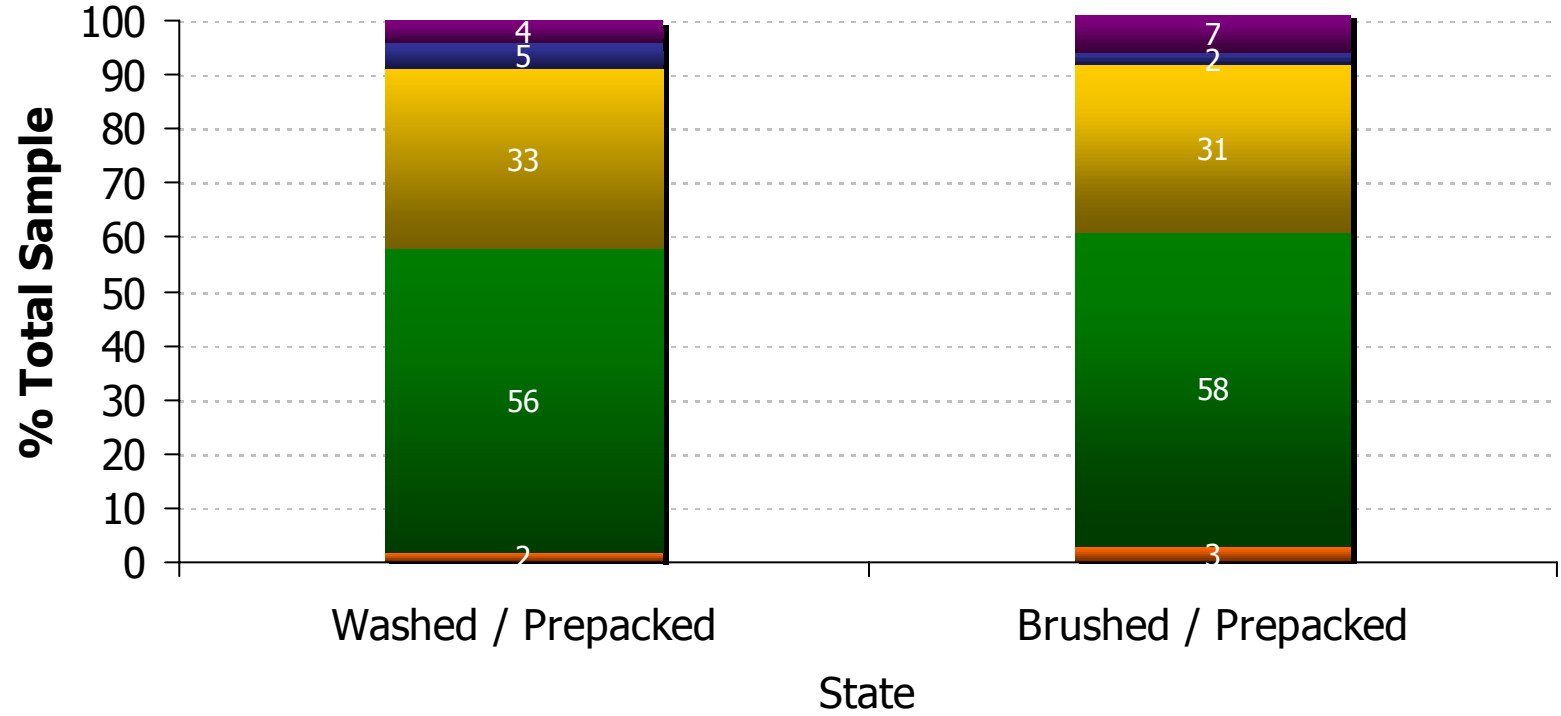


Dampness

By Style / Pack



■ No ■ Dry ■ Damp ■ Free Moisture ■ Water droplets

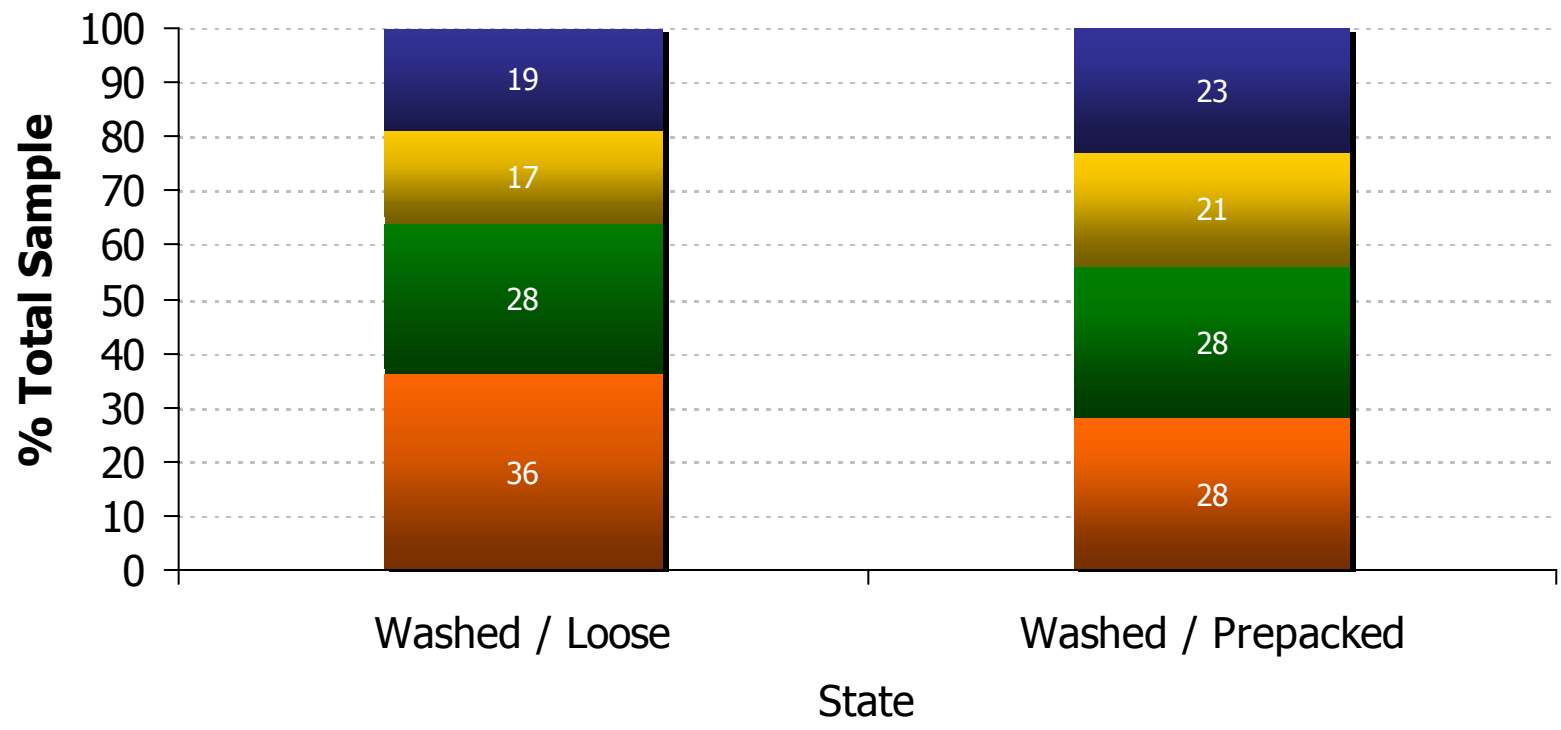


Brightness

By Style / Pack



- Fresh with surface sheen
- Fresh but no surface sheen
- Slightly dull in appearance
- Strong darkening



Q #	Question	Answer		RDO Comment
1	Date	<input type="text"/>	info	
STORE HANDLING - Speak with Retail Staff				
<i>The following 9 questions should only be completed ONCE per site</i>				
2	Was the Produce Manager Available?	Yes No	1 0	
3	Were other retail staff available?	Yes No	1 0	
4	Potatoes are normally received at the retail store by:	Refrigerated transport Insulated van (not refrigerated) Covered truck Open truck Other N/A	info	
5	Potatoes are normally received at the retail store from:	Distribution Centre Wholesale Market Packing Shed Producer Other N/A	info	
6	Are potatoes quality checked on receipt at the store?	Yes No N/A	1 0	
7	Are potato temperatures taken on receipt at the store?	Yes No N/A	1 0	
8	Where are potatoes stored between receipt and placing on display? <i>turn into yes/no question</i>	Coolroom General storage area All potatoes directly to display N/A	info	
9	Are potatoes covered to keep in the dark during storage?	Yes No N/A	2 1	
10	Comments		info	
VARIETY ONE				
11	What is the variety of Potato?	<input type="text"/>	general	
12	What was the Style?	Washed Brushed/Dirty Other	info	
13	Pack Type	Loose Prepacked	info	
14	What is the sample size? <i>If loose, sample size =10, if bagged sample size = no. in bag.</i>	<input type="text"/>	general	
15	What is the price?	<input type="text"/>	general	
16	What is the bag type?	Ventilated clear plastic Ventilated colour plastic Non ventilated clear plastic Non ventilated colour plastic Net Bag Paper Bag Carton Other	info	

17	What is the Packer name?	<input type="text"/>	general
18	Where is the Packer location?	<input type="text"/>	general
19	What is the Batch No./Code	<input type="text"/>	general
20	Best by/ Use by date	<input type="text"/>	general
21	Display Exposure	Shaded from direct Light Direct Light Exposure	1 0
22	Display Temperature	Refrigerated Store Temp	1 0
23	Sprouting	Yes No	0 1
How many potatoes in the sample size have these indicated degrees of Skinning? <i>Should add up to sample size.</i>			
24	Mature	<input type="text"/>	info
25	Intact	<input type="text"/>	
26	Slight	<input type="text"/>	
27	Severe	<input type="text"/>	
How many potatoes have these Textures? <i>Should add up to sample size</i>			
28	Very Hard	<input type="text"/>	info
29	Firm	<input type="text"/>	
30	Soft	<input type="text"/>	
31	Very Soft	<input type="text"/>	
32	Number of potatoes in sample size rotting or breaking down	<input type="text"/>	general
Surface Defects and Damage <i>Number in sample that show the following characteristics</i>			
33	Fresh High	<input type="text"/>	general
34	Fresh Low	<input type="text"/>	
35	Aged High	<input type="text"/>	
36	Aged Low	<input type="text"/>	
37	Diseased High	<input type="text"/>	
38	Diseased Low	<input type="text"/>	
39	Bruising High	<input type="text"/>	
40	Bruising Low	<input type="text"/>	
41	How many in sample size have physical defects?	<input type="text"/>	general
<i>Following three questions, for Bagged Potatoes Only</i>			
42	Is the Appearance of the Bag Dirty/Muddy inside?	Yes No N/A	0 1
43	Is Condensation present in bag?	Yes No N/A	0 1
44	Dampness - Physically touch potatoes to test.	No Dry Damp Free Moisture Water droplets N/A	5 4 3 2 1
<i>Following question is for Washed Potatoes Only</i>			
45	Brightness	Fresh with surface sheen Fresh but no surface sheen Slightly dull in appearance Strong darkening N/A	4 3 2 1

VARIETY TWO		
46	What is the variety of Potato?	<input type="text"/> <i>general</i>
47	What was the Style?	<input type="text"/> Washed <i>info</i> <input type="text"/> Brushed/Dirty <input type="text"/> Other
48	Pack Type	<input type="text"/> Loose <i>info</i> <input type="text"/> Prepacked
49	What is the sample size? <i>If loose, sample size =10, if bagged sample size = no. in bag.</i>	<input type="text"/> <i>general</i>
50	What is the price?	<input type="text"/> <i>general</i>
51	What is the bag type?	<input type="text"/> Ventilated clear plastic <i>info</i> <input type="text"/> Ventilated colour plastic <input type="text"/> Non ventilated clear plastic <input type="text"/> Non ventilated colour plastic <input type="text"/> Net Bag <input type="text"/> Paper Bag <input type="text"/> Carton <input type="text"/> Other
52	What is the Packer name?	<input type="text"/> <i>general</i>
53	Where is the Packer location?	<input type="text"/> <i>general</i>
54	What is the Batch No./Code	<input type="text"/> <i>general</i>
55	Best by/ Use by date	<input type="text"/> <i>general</i>
56	Display Exposure	<input type="text"/> Shaded from direct Light <i>1</i> <input type="text"/> Direct Light Exposure <i>0</i>
57	Display Temperature	<input type="text"/> Refrigerated <i>1</i> <input type="text"/> Store Temp <i>0</i>
58	Sprouting	<input type="text"/> Yes <i>0</i> <input type="text"/> No <i>1</i>
How many potatoes in the sample size have these indicated degrees of Skinning? <i>Should add up to sample size.</i>		
59	Mature	<input type="text"/> <i>info</i>
60	Intact	<input type="text"/>
61	Slight	<input type="text"/>
62	Severe	<input type="text"/>
How many potatoes have these Textures? <i>Should add up to sample size</i>		
63	Very Hard	<input type="text"/> <i>info</i>
64	Firm	<input type="text"/>
65	Soft	<input type="text"/>
66	Very Soft	<input type="text"/>
67	Number of potatoes in sample size rotting or breaking down	<input type="text"/> <i>general</i>
Surface Defects and Damage <i>Number in sample that show the following characteristics</i>		
68	Fresh High	<input type="text"/> <i>general</i>
69	Fresh Low	<input type="text"/>
70	Aged High	<input type="text"/>
71	Aged Low	<input type="text"/>
72	Diseased High	<input type="text"/>
73	Diseased Low	<input type="text"/>
74	Bruising High	<input type="text"/>
75	Bruising Low	<input type="text"/>
76	How many in sample size have physical defects?	<input type="text"/> <i>general</i>

<i>Following three questions, for Bagged Potatoes Only</i>			
77	Is the Appearance of the Bag Dirty/Muddy inside?	Yes	0
		No	1
		N/A	
78	Is Condensation present in bag?	Yes	0
		No	1
		N/A	
79	Dampness - Physically touch potatoes to test.	No	5
		Dry	4
		Damp	3
		Free Moisture	2
		Water droplets	1
		N/A	
<i>Following question is for Washed Potatoes Only</i>			
80	Brightness	Fresh with surface sheen	4
		Fresh but no surface sheen	3
		Slightly dull in appearance	2
		Strong darkening	1
		N/A	
VARIETY THREE			
81	What is the variety of Potato?		general
82	What was the Style?	Washed	info
		Brushed/Dirty	
		Other	
83	Pack Type	Loose	info
		Prepacked	
84	What is the sample size? <i>If loose, sample size =10, if bagged sample size = no. in bag.</i>		general
85	What is the price?		general
86	What is the bag type?	Ventilated clear plastic	info
		Ventilated colour plastic	
		Non ventilated clear plastic	
		Non ventilated colour plastic	
		Net Bag	
		Paper Bag	
		Carton	
		Other	
87	What is the Packer name?		general
88	Where is the Packer location?		general
89	What is the Batch No./Code		general
90	Best by/ Use by date		general
91	Display Exposure	Shaded from direct Light	1
		Direct Light Exposure	0
92	Display Temperature	Refrigerated	1
		Store Temp	0
93	Sprouting	Yes	0
		No	1
How many potatoes in the sample size have these indicated degrees of Skinning? <i>Should add up to sample size.</i>			
94	Mature		info
95	Intact		
96	Slight		
97	Severe		
How many potatoes have these Textures? <i>Should add up to sample size</i>			
98	Very Hard		info
99	Firm		
100	Soft		
101	Very Soft		

102	Number of potatoes in sample size rotting or breaking down		general
Surface Defects and Damage			
<i>Number in sample that show the following characteristics</i>			
103	Fresh High		general
104	Fresh Low		
105	Aged High		
106	Aged Low		
107	Diseased High		
108	Diseased Low		
109	Bruising High		
110	Bruising Low		
111	How many in sample size have physical defects?		general
<i>Following three questions, for Bagged Potatoes Only</i>			
112	Is the Appearance of the Bag Dirty/Muddy inside?	Yes	0
		No	1
		N/A	
113	Is Condensation present in bag?	Yes	0
		No	1
		N/A	
114	Dampness - Physically touch potatoes to test.	No	5
		Dry	4
		Damp	3
		Free Moisture	2
		Water droplets	1
		N/A	
<i>Following question is for Washed Potatoes Only</i>			
115	Brightness	Fresh with surface sheen	4
		Fresh but no surface sheen	3
		Slightly dull in appearance	2
		Strong darkening	1
		N/A	

Potato Retail Survey Guidelines

Test Sample Selection

1. Evaluate 4 different lines in each store.
2. Target test samples in the following priority:
 - High sales volume lines.
 - Washed and brushed pre-packs.
 - Loose washed.

Avoid sampling the same variety and types in the one store presented in different ways, ie. Loose vs pre-packed 2.5kg vs 5 kg pre-packs.

Tuber Selection

- Loose: Select 20 random tubers from the display. Be sure to select tubers from all depths and areas of the display to ensure an even representation of the display.
- Packaged: Randomly select a single bag sample, open the bag and count the total number of tubers present. Buy the smallest size bag for similar samples.

Once potato selection has occurred, complete the scoring sheet for each sample.



NOTES ON DATA SHEET

Packer Information

- Packer information will be present on packaged potatoes, but loose potato information may have to be obtained from the stores fruit and vegetable manager or bulk bags/cartons in the storage area.

Display Location

- From a visual impact point of view is the display prominent in its positioning or mixed in with the other fruit and vegetables displayed.

Score	Explanation
Prime	If the display is a central and a strong focus in the fruit and vegetable area.
Normal	If the display is easily located, but surrounded by other produce.
Poor	If the display is mixed with other produce and difficult to locate.

Display Exposure

- As potatoes turn green when exposed to light, the exposure of the potatoes to strong light needs to be noted.
- For pre-packed potatoes, are they displayed with the opaque (labelled) side of the bag facing up or are the tubers exposed to the light through clear packaging?

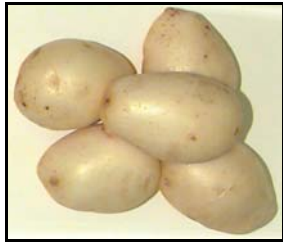
Sweating/Moisture in Pre-packs

- Tuber dampness at opening:

Score	Explanation
Dry	Absolutely dry to touch.
Damp	A wet sensation can be felt when touched.
Free moisture	A moisture film is visible.
Water droplets	Water droplets are visibly obvious.

Brightness

This photo series may be useful in determining scores in the categories:



Fresh with surface sheen



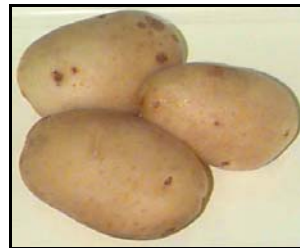
Fresh but no surface sheen



slightly dull surface



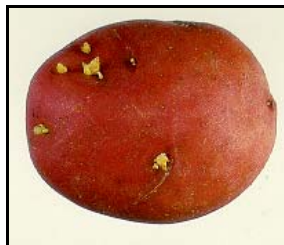
Dull appearance



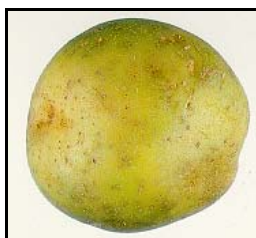
Strong darkening

Sprouting

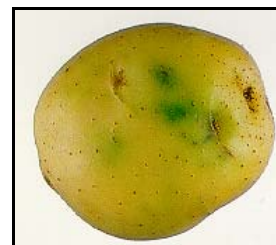
- If there is evidence that the tubers have sprouted, but the sprouts are now dry /dead or have been cut off give the sample a 'Yes' score with no estimate of the length.



Greening



General greening



Localised greening

Texture

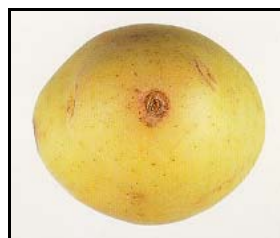
- Assess by holding the tuber in the palm of your hand and pressing into it with the tips of your fingers.

Score	Explanation
Very hard	No indentation is made when pressed hard.
Firm	Slight give in the tuber when pressed.
Soft	An indentation remains after pressing on flesh.
Very soft	Flesh is very spongy and the visual sign of shrivelling is evident.

Breakdown

- Any signs of soft or mushy spots should be scored as a ‘Yes’.

These are photos of some typical rots. Soft rots are often first evident as darkening and softening around the lenticels. Often rots will be much less developed than in these photos.



Stem-end rot



Fusarium rot

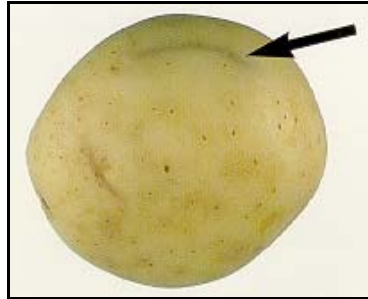


Phoma rot

Surface Damage and Defects

- Some tubers may have more than one defect and should be scored in each relevant category in the table.
- The fresh vs aged damage categories are designed to try and separate damage occurred in-store compared to that occurring in the field or at the packing shed.
- Any fresh damage exposing the flesh of the tuber can be classified as fresh if the exposed flesh is moist and damp. Aged damage will have dry flesh and be coloured white from dried starch at the damage site.

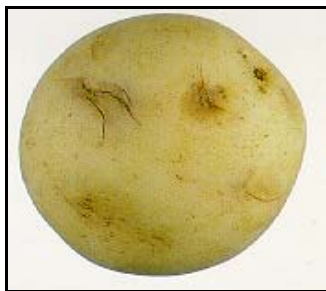
This photo series may be useful in determining scores in the categories:



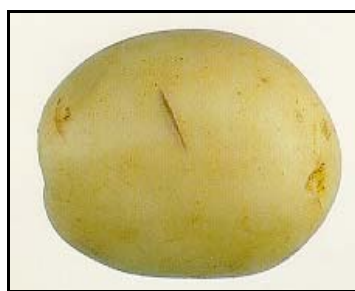
Bruise

(A bruise is displayed as a dark discolouration under the skin that can be associated with cracking)

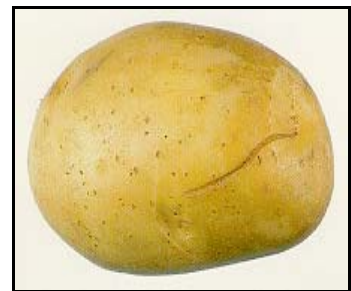
Examples of Damage



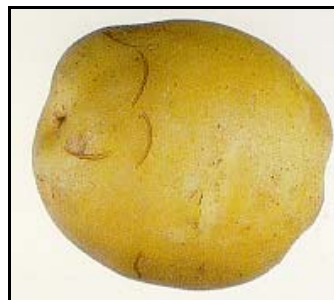
Shatter bruise



Cut

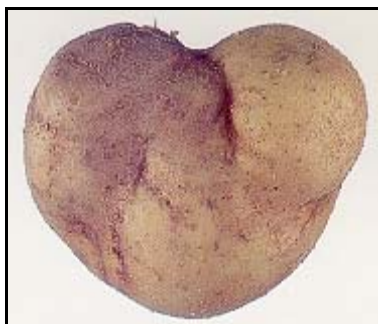


Splitting

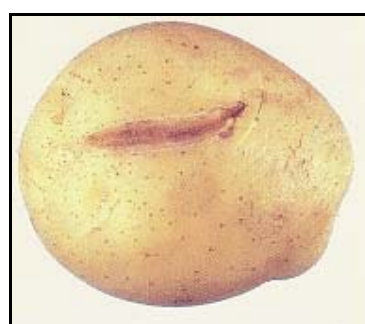


Thumbnail crack

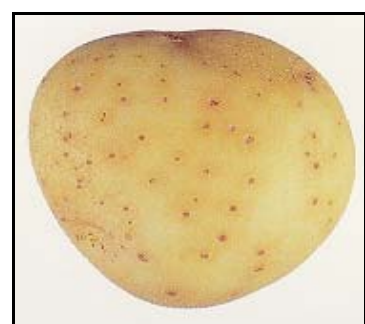
Examples of Physical Defects



Malformation

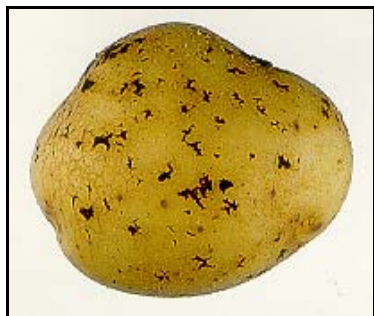


Growth crack

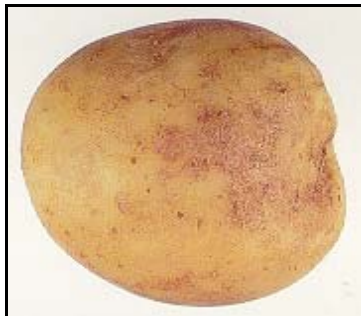


Enlarged lenticels

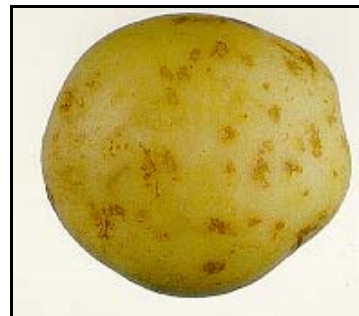
Examples of Diseased Tubers



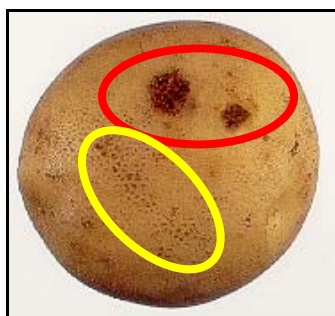
Rhizoctonia



Silver scurf

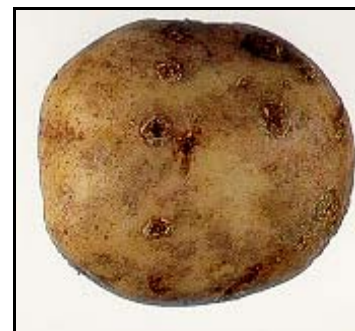


Black dot



Common scab (—)

Skin russeting (—)

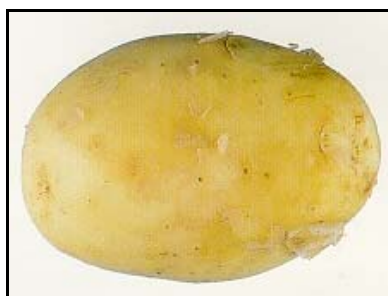


Powdery scab

Skinning

Explanation for skinning scores:

Score	Explanation
Mature	Firm, well formed and intact skin.
Intact	Soft-skin with no peeling or skin loss
Slight	Slight evidence of skin loss, not easily peeled from the tuber.
Severe	Large selection of skin easily peeled off the tuber.



Slight skinning



Get Fresh!

produce information for improved quality and sales

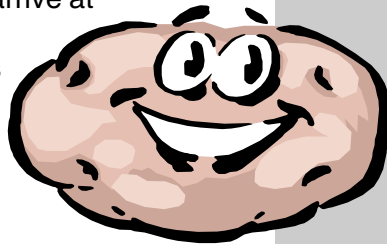
Potatoes

NOVEMBER/DECEMBER 2002 - CYCLE 1

Fresh Potatoes are subject to quality loss at all stages of the supply chain, but presentation of an attractive product to the final consumer at retail is essential. A wide range of different potato varieties and styles are readily available to consumers throughout the year.

Check Quality on Arrival

A quality check of potatoes as they arrive at retail helps to identify where quality losses may be occurring and allows them to be addressed. Apart from the actual quality of the tubers, the conditions under which they arrive should be checked eg. the product temperature and the condition of the packaging.



Regrade any bags that are dropped or damaged

Mechanical damage, which includes bruising and cracks or cuts, can result from mishandling of bags of potatoes is not only a problem in itself, but can also allow rots to develop in tubers. This can be a particular problem in prepacks, where the defects may not be noticed until the consumer uses the product at home and is dissatisfied with the purchase.

Ensure Good Inventory & Rotation – First In, First Out

Potato stocks should be placed on display in the order in which they were received. This should prevent a build up of older potatoes which are more likely to lose quality through sprouting or shrivelling (which can occur despite correct storage.)

Storage

Store potatoes in a dark, well ventilated place at 4-10°C.

Potatoes should always be stored in a dark place, to prevent both greening and increased levels of toxic compounds. However, dark conditions alone will not prevent tubers from sprouting.

Short term storage temperatures at retail stores between 4°C and store temperature are generally sufficient to maintain the quality of mature potatoes.

For washed immature potatoes with soft skins, storage at less than 10°C will be beneficial in preserving quality.

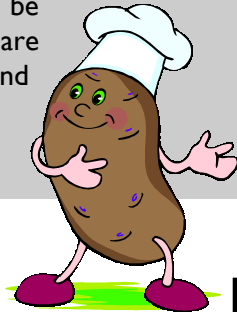
Prolonged storage (more than 1 week) of potatoes at less than 7°C will convert tuber starch into sugars, which means they will discolour when cooked, particularly by deep frying.

Overheating of potatoes during storage can lead to water loss and shrivelling; particularly in those with skin wounds and will also accelerate the development of any rots and breakdown if susceptible.

Handling Potatoes

DO NOT HANDLE COLD POTATOES

Refrigerated potatoes should not be moved directly into the retail display, which may be at around 20°C. Such a sudden temperature increase can increase their susceptibility to cracking and splitting when handled. Hence care in moving potatoes from refrigerated storage to a warming area or onto the retail display is necessary to not damage the potatoes. Ideally, potato temperatures should be increased in stages. Cold potatoes are also more susceptible to bruising, and may sweat if placed onto retail displays.



HANDLE POTATOES CAREFULLY

Potatoes are often treated as if they were rocks or objects that don't require care. This is incorrect. A potato is a living product until it is cooked and needs to be handled very carefully if it is to reach the consumer as a safe, high quality product. Potatoes can bruise easily, but the damage may not be immediately evident. To minimise bruising, potatoes should never be allowed to drop more than 15cm. In a retail store, there should be no need for potatoes to be dropped from damaging heights. Potatoes that fall from a display to the floor should be discarded.

Greening

Greening is probably the greatest threat to potato quality in retail displays. Unfortunately, the white fluorescent lights found in most retail stores are among the worst possible for causing greening. Displaying potatoes under yellow or green light or covering the stock to block light is very beneficial - but of course these aren't always possible. Also, soil on brushed potatoes tends to hide greening rather than prevent it.

TRY THIS:

- Limit the size of the display to about a half-day's sale to reduce exposure to light and elevated temperatures. This will help reduce wastage.
- Rotate stock in display with older potatoes placed on top - "retail ready cartons" can help improve stock rotation.
- Remove poor quality stock whenever it is detected.

What to do when a rotten potato is found in a bag?

If a rotting potato is found in a prepack bag, or bulk bag, carton then....

1. Remove the rotten tuber and discard;
2. Clean and check any adjacent tubers for soft spots;
3. If in a prepack, replace the discarded tuber with one of similar size, type and variety;
4. Move stock quickly – it is possibly a sign of pending greater problems;

.....consider unpacking prepacks to loose sell, this will dry the tubers and reduce rot growth and infection rates.



For further information contact your local Fresh Produce Retail Officer:

NSW	Benjamin Webb	0421 475 290
NSW	Joe Calarco	0414 431 257
VIC	Karen Peterson	0412 444 652
VIC	Rose Christmass	0412 380 006
QLD	Christine Tierney	0411 276 156
SA	Ivana Fedele	0422 889 491
WA	Fiona Houston	0407 901 406

or contact Gina Cowart on ph: 02 8295 2300.





Get Fresh!

produce information for improved quality and sales

Potatoes

FEBRUARY 2003 - CYCLE 2

Types of Mechanical Damage

The first stage in reducing damage is knowing what to look for and the possible causes.

Skinning, splits, cuts and cracks

are all visible on the outside of potatoes. They expose the flesh of the potato, allowing water loss and the entry of disease micro-organisms (bacteria and fungi).

- Water loss in storage, even through fine "hair" cracks, may be important, and skinning/scuffs on immature potatoes can also result in high water evaporation.
- Large cuts, cracks and splits caused by machinery may penetrate deep into the tuber, causing severe water loss and disease such as rots.

Blackspot (or bluespot) bruise

in potatoes occurs as a result of impacts (i.e drops, knocks or collisions). Blackspot bruising is not usually fully visible until tubers are peeled and the area of bruising can be small, sometimes only a few millimetres in diameter. The colour of the bruises varies from black or dark blue-grey to brown, but the edges of the bruise are not usually clear-cut. Discolouration may take several days after impact but usually appears within 18 hours, or even faster at higher temperatures.



Pressure bruise occurs when storage piles are too deep, putting excessive pressure on the lowest tubers. Pressure bruise symptoms are similar to blackspot bruising; however:

- The skin usually remains intact and damage is located within 15mm of the surface.

- The discolouration of the skin shows through the skin beneath flattened, softened and indented patches.
- Pressure bruises are dark brown to black in colour with **distinct edges**.

Pressure bruising is made worse by high storage temperatures and low humidity and often the centre of the bruise dries and shrinks, leaving a hollow cavity and is made worse. (Graeme Thomson & Andrew Henderson, 1997)

Rotation and proper handling will help minimise the occurrence and development of mechanical damage and will keep the customers satisfied with the tubers purchased in your store.

What Consumers Want

The findings from a consumer research project by Creative Dialogue mirror those done by the British Potato Council, that consumers:

- Want to know more about varieties
- Want more recipes
- Believe that the health benefits are understated
- Want specific meals for occasions
- Want potatoes that are quick and easy to cook
- Want a wider choice of potatoes – fresh and processed

So if you have the opportunity, talk to your customers about potatoes and all their wonderful uses and varieties!

Get Fresh!

Potato Characteristics

Variety	Tuber Type	Strengths	End Use				
			Boil	Bake	Micro	Fry	Salads
WHITE FLESH VARIETIES							
Coliban	oblong, white	Excellent skin colour; heat tolerance; high yield	++	++	++	+	+
Crystal	oblong, white	Excellent skin colour and sheen; high yield	++	++	++	+	+
Exton	round, white	Good skin colour; reliable high yields, Good for boiling mashing, salads, dry baking and roasting	+	++	++	+	+
Nadine	oval - round	Excellent for salads and microwave, fries black	++	++	++	-	+
Sebago	oblong, white	Good appearance, reliable high yield	++	+++	++	++	+
YELLOW FLESH VARIETIES							
Desiree	oblong, red	Attractive light yellow flesh; good flavour; high yield, good for potato salads and stews	-	++	++	+	+++
Nicola	oblong - long	Excellent for salads, good for boiling, baking, and roasting	+	++	++	+	++
Patrones	long yellow	Excellent for salads, good for boiling and frying	+	++	++	+	++
Spunta	long yellow	Good for boiling, salads, baking and roasting	+	++	++	+	++
RED SKIN VARIETIES							
Bison	round, red	Excellent red colour and shape	+	+	+	-	+
Desiree	oblong, red	Attractive light yellow flesh; good flavour; high yield	-	++	++	+	+++
Pontiac	round, red	Excellent boiling quality, high yields	+++	++	+++	-	++
Ruby Lou	oblong, red	Excellent smooth red skin; resistant to shatter crack	++	++	+++	+	++
NOVELTY VARIETIES							
Binjite	oblong-long	Excellent for potato salads, good to boil or mash	++	++	++	+	+++
Kipfler	long-oval	Excellent for salads, good for roasting and boiling	+	+++	++	+	+++
Pink Fir Apple	long, light pink skin	Excellent for salads, has a trace of an apple -type flavour	+	++	++	+	+++
Purple Congo	long, knobby	Purple flesh; good for baking, astringent taste	+	+	+	+	+++
Red La Soda	round, red	Good red skin colour; high yields	++	++	++	+	+++
Toolangi Delight	round	White flesh; excellent for boiling/ mashing, good for salads, baking, roasting	+++	++	++	+	+++

Healthy Potatoes

- No potato contains fat.
- A 100g potato contains only about 335kJ (80 calories) – it is the ways in which potatoes are often prepared which give them the reputation of being fattening.
- All potatoes are a good source of vitamin C and contribute dietary fibre.
- Potatoes are one of the most filling foods.
- There are many interesting ways to prepare potatoes without making them less healthy.



For further information contact your local Fresh Produce Retail Officer:

NSW Benjamin Webb 0421 475 290
 NSW Joe Calarco 0414 431 257
 VIC Karen Peterson 0412 444 652
 VIC Rose Christmass 0412 380 006
 QLD Christine Tierney 0411 276 156
 SA Ivana Fedele 0422 889 491
 WA Fiona Houston 0407 901 406

or contact Gina Cowart on ph: 02 8295 2300.



Horticulture Australia