

SURVEY REPORT ON THE DISTRIBUTION AND WASTE DISPOSAL OF BANANAS BY RETAILERS IN AUSTRALIA

BACKGROUND

Biosecurity Australia (BA) has prepared a revised draft import risk analysis (IRA) report for the importation of mature hard green Cavendish bananas from the Philippines. To help evaluate the potential quarantine risks associated with the requested importation of Philippine bananas, information on the distribution of Australian bananas and disposal of banana waste was collected. This was provided in part through a survey of stores retailing fruit in Australia. Information from the survey has been used in an indicative way to provide values for the model that aided the IRA team in determining the potential risks associated with pests and diseases.

SURVEY METHODOLOGY

A telephone survey of 200 retail stores selling fruit (supermarkets, grocery stores) in Australia was conducted by BA in February 2006. Retail stores surveyed were selected according to their location and type.

Stores were selected on the basis of being located in *grower areas* (i.e. commercial banana growing area) or *other areas* (i.e. non-commercial banana growing area) and whether they were owned by a *major chain* (i.e. stores owned by one of the two national grocery chains) or owned by *independents* (i.e. stores not owned by one of the two national grocery chains). This stratification of the 200 selected stores into four groups resulted in:

- 50 stores located in the *grower areas* and owned by a *major chain*
- 50 stores located in the *grower areas* and owned by *independents*
- 50 stores located in the *other areas* and owned by a *major chain*
- 50 stores located in the *other areas* and owned by *independents*

Retailers for each stratified group were randomly selected from the 'supermarkets and grocer stores' category of www.yellowpages.com.au. In February 2006, this category listed 5246 businesses throughout Australia. Before beginning the survey, the methodology proposed was approved by the Australian Government Statistical Clearing House.

The survey was conducted by BA staff, who telephoned an appropriate store representative (generally the Produce Manager) and recorded responses to the survey questionnaire (Appendix 1). The survey took on average five minutes to complete. Stores unwilling to participate in the survey were noted as a refusal. Additionally, if at least five unsuccessful attempts were made to contact a store or speak to an appropriate store representative, these were noted as a non-response. Interviews continued until 50 stores responded for each stratified group.

RESULTS

A variety of data was collected from this survey. The results below are a summary of these responses and represent the simple counts, averages or proportions across the relevant responding group of retailers.

1. Survey participation

- 8% of stores (n=21) contacted did not wish to participate in the survey
- 17% of stores (n=44) contacted to participate in the survey were classified as a non-response as the store or an appropriate representative from the store could not be contacted after five attempts

2. Bananas purchased - *major chain stores*

- Each major chain store purchased on average 148 cartons of bananas/week (n=95 stores) in 2004–05
- Volume of bananas purchased by individual major chain stores ranged from 8–400 cartons/week

3. Bananas purchased - *independent stores*

- Each independent store purchased on average 24 cartons of bananas/week (n=99 stores) in 2004–05
- Volume of bananas purchased by individual independent stores ranged from 0.5–160 cartons/week

4. Source of bananas - *major chain stores*

- 89% of bananas obtained by major chain stores were via their supermarket distribution chain
- 10% of bananas obtained by major chain stores were via the wholesale system (it is likely that the majority of bananas were purchased through large city based wholesalers rather than smaller regional wholesalers)

Source of bananas for major chain stores

	Source (%)		
	Wholesale system [†]	Supermarket distribution chain	Direct from grower
Cartons	10.3	89.1	0.6

[†]Wholesale system includes bananas purchased through large city-based wholesalers (eg. members of the Association of Australian Banana Wholesalers), regional wholesalers and or other retailers
Note: figures based on the volume of bananas purchased by 95 major chain stores (14,059 cartons/week)

5. Source of bananas - independent stores

- 67% of bananas obtained by independent stores were sourced via the wholesale system

Source of bananas for independent stores

	Source (%)		
	Wholesale system [†]	Supermarket distribution chain	Direct from grower
Cartons	66.8	20.5	12.7

[†]Wholesale system includes bananas purchased through large city-based wholesalers (eg. members of the Association of Australian Banana Wholesalers), regional wholesalers and or other retailers
 Note: figures based on the volume of bananas purchased by 99 independent stores (2,383 cartons/week)

6. Sales distribution of bananas

- Of the bananas sold by all stores, 98% were sold to consumers and 2% to food services (i.e. cafes, restaurants, hotels)

Distribution of bananas by all stores

	Sales distribution (%)	
	Consumers	Food services [†]
Grower areas (76 stores)	97.5	2.5
Other areas (75 stores)	98.4	1.6
Average	98.0	2.0

[†]Food services include outlets such as cafes, restaurants and hotels
 Note: figures based on the volume of bananas sold by 151 stores (11,726 cartons/week)

7. Bananas disposed of as waste by store location

- Of the bananas purchased by stores in the grower areas, 4.4% were disposed of as waste
- Of the bananas purchased by stores in the other areas, 3.5% were disposed of as waste

Percentage of bananas disposed of as waste by store location

	Banana waste (%)
Grower areas (98 stores)	4.43
Other areas (96 stores)	3.50
Average	3.93

Note: figures based on the volume of bananas disposed of as waste by 194 stores (647 cartons/week)

8. Bananas disposed of as waste by store type

- Of the bananas purchased by major chain stores, 4.1% were disposed of as waste
- Of the bananas purchased by independent stores, 2.9% were disposed of as waste

Percentage of bananas disposed of as waste by store type

	Banana waste (%)
Major chain (95 stores)	4.11
Independent (99 stores)	2.91
Average	3.93

Note: figures based on the volume of bananas disposed of as waste by 194 stores (647 cartons/week)

9. Bananas disposed of as waste by stores

- Levels of banana waste for individual stores ranged from 0–25%
- Of the 194 stores who provided a percentage of bananas disposed of as waste, 15 stores disposed zero bananas as waste and 112 stores disposed less than 4% of bananas as waste

Level of banana waste disposed of by all stores

Banana waste (%)	Stores (#)
0	15
>0–2	49
>2–4	48
>4–6	26
>6–8	13
>8–10	11
>10–12	17
>12–16	9
>16–20	3
>20–25	3
Store total	194

10. Disposal points of banana waste – all stores

- Of the banana waste generated by all stores, 92.5% was disposed to a municipal tip or collected as organic waste

Disposal points of banana waste generated by all stores

	Municipal tip	Disposal type		
		Organic waste collection	Animal feed	Other [†]
Cartons (#/wk)	468.6	129.8	46.9	1.5
Cartons (%)	72.4	20.1	7.3	0.2

[†]Other is bananas placed in a compost bin or used as untreated garden mulch

Note: figures based on the volume of bananas disposed of as waste by 194 stores (647 cartons/week)

11. Disposal points of banana waste – grower areas

- Of the banana waste generated by stores in the grower areas, 95% was disposed to a municipal tip or collected as organic waste

Disposal points of banana waste generated by stores located in the grower areas

	Municipal tip	Disposal type		
		Organic waste collection	Animal feed	Other [†]
Cartons (#/wk)	277.0	46.2	15.8	1.5
Cartons (%)	81.4	13.6	4.6	0.5

[†]Other represents bananas placed in a compost bin or used as untreated garden mulch

Note: figures based on the volume of bananas disposed of as waste by 98 stores (340.5 cartons/week)

12. Disposal points of banana waste – other areas

- Of the banana waste generated by stores in the other areas, 90% was disposed to a municipal tip or collected as organic waste

Disposal points of banana waste generated by stores located in the other areas

	Municipal tip	Disposal type		
		Organic waste collection	Animal feed	Other [†]
Cartons (#/wk)	191.7	83.6	31.2	0.0
Cartons (%)	62.6	27.3	10.2	0.0

[†]Other represents bananas placed in a compost bin or used as untreated garden mulch

Note: figures based on the volume of bananas disposed of as waste by 96 stores (306.5 cartons/week)

13. Disposal of used banana cartons

- Used banana cartons were mainly disposed of through cardboard recycling, irrespective of store type

Methods of disposal of used banana cartons

Disposal method	Store type (# of stores)	
	Major chain	Independent
Cardboard recycling	79	42
Re-used by customers	2	16
Cardboard recycling & re-used by customers	9	8
Re-used by store & re-used by customers	4	3
Cardboard recycling & or re-used by store	5	3
Collected by grower or wholesaler delivering bananas	-	13
Municipal tip	-	5
Other	-	3 [†]
Not applicable (bananas not purchased in cartons)	1	7
Store total	100	100

[†]Other refers to disposal methods of used banana cartons for the three independent stores. These were as follows, store 1: re-used by customers and sent to municipal tip, store 2: re-used by customers and collected by the wholesaler delivering bananas, store 3: cardboard recycling and sent to municipal tip

Note: figures based on 200 stores

14. Disposal of plastic lining from used banana cartons

- Plastic lining from used banana cartons was mainly disposed of through plastic recycling or the municipal tip

Methods of disposal of plastic lining from used banana cartons

Disposal method	Store type (# of stores)	
	Major chain	Independent
Plastic recycling	51	17
Municipal tip	37	67
Plastic recycling & municipal tip	10	-
Collected by grower or wholesaler delivering bananas (i.e. plastic stays in cartons)	-	7
Not applicable (bananas not purchased in cartons, or cartons not lined with plastic)	2	9
Store total	100	100

Note: figures based on 200 stores

APPENDIX 1 - SURVEY QUESTIONNAIRE

1. Where is your store located and what is the postcode?
Location: _____
Postcode: _____

2. In the past financial year what percentage of bananas did you obtain from:
 - a. [%] wholesalers
 - b. [%] supermarket distribution chain
 - c. [%] direct from growers
 - d. [%] other (*please specify*) _____

3. Compared to food service outlets (i.e. cafes, restaurants, hotels) what percentage of bananas do you sell to consumers?
[%]

4. In the past financial year, approximately how many bananas did you buy per week? (*please also circle the unit*)
[] cartons / kg / tonnes

5. What percentage of purchased bananas do you dispose of as waste?
[%]

6. In what percentages do you dispose of your banana waste to:
 - a. [%] general garbage collection (i.e. goes to a local government tip)
 - b. [%] organic waste collection
 - c. [%] raw material (i.e. for animal feed or untreated mulch)
 - d. [%] other (*please specify*) _____

7. How do you dispose of **used banana cartons**? (*please circle one or more*)
 - a. recycled
 - b. general garbage collection (i.e. goes to a local government tip)
 - c. re-used by customers
 - d. other (*please specify*) _____

8. How do you dispose of **plastic lining from used banana cartons**? (*please circle one or more*)
 - a. recycled
 - b. general garbage collection (i.e. goes to a local government tip)
 - c. other (*please specify*) _____

Other comments
