Optimal Fresh

The fruit, vegetable and fresh produce expert system

Detailed Report **Printed on** Wednesday, 19 December 2001

Crop beetroot, with tops

Maturity stage General
Category Vegetable
Plant Part Root
Usage Cooked, Processed/ Canned
Botanical name *Beta vulgaris* subsp.*vulgaris* L.
Botanical family Chenopodiaceae

Picture source: Sydney Postharvest Laboratory, 1999

Alternate names include

(E) beetroot, with tops
(E) with tops, beetroot

Refrigerated Container/Coolroom Recommendations

Optimum product storage temperature 0.0 to 1.0°C

Temperature set point **0.0°C**
Add a margin for uncertainty in equipment performance if necessary.
For return air control set point add 1°C to delivery set point.

Ventilation (air exchange) settings for containers:
6 m (20') = **10 m³/h = 5 cfm**
12 m (40') = **15 m³/h = 10 cfm**

Acceptable product temperature at loading into container **0.0 to 5.0°C**

Key Properties

Storage time (days)†	**Humidity (% RH)**	Freezing point (°C)	Storage time at ambient (~20°C)	Ventilation rate
7 - 14	**95 - 100**	-0.4	7 - 8*	Very Low

† at optimum storage temperature
* Values taken from beetroot.

Use plastic bag

Other Properties

Ref	Maturity stage	Air exchange *	Freezing Point (°C)	Ethylene production **	Ethylene sensitivity	Ice compat-ibility	Water loss ***	% Water content	Bruising suscept-ibility
1	General	Very Low	-0.4	Very Low	Low				
1#	General	Very Low	-0.9	Very Low	Low	Yes	M (3.0)	87.6	

\# Values taken from beetroot

* Air exchange rates: Nil = 0%; Very low = 25%; Low = 50%; Medium = 100%; High = 200%; Very high = 400% fresh air/hour.

** Ethylene production rates at 20°C: Nil = 0 nM; Very low = <4 nM; Low = 4 - 40 nM; Medium = 40 - 400 nM; High = 400 - 4000 nM; Very high =>4000 nM ethylene/kg/hour.

*** Where % weight loss/week is given this is converted as: Low <= 1%; Medium = 1.1 - 3.4%; High = >3.5%

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Controlled Atmosphere

Ref	Maturity stage	% O2		% CO2		Temp°C		Benefit of controlled atmosphere
		min	max	min	max	min	max	
1	General					0	0	None
1#	General					0	0	Slight
1#	Fresh Cut	5	5	5	5	0	5	Moderate

Values taken from beetroot

Reference notes

1 CA storage of beetroot cannot be advised, high %RH is best

Respiration* and Heat Transfer

Ref	Maturity stage	0°C		5°C		10°C		15°C		20°C		25°C		Specific heat kJ/kg/EC **
		min	max	min	max	min	max	min	max	min	max	min	max	
1	General	32	32	41	41	65	65	74	74	118	118			
1#	General	12	20	32	34	51	61	71	117	149	214			3.77

Values taken from beetroot

* Respiration values given are in Watts per tonne. 1 W/t = 20.4 kCal/t/d = 82.1 Btu/tn./d = 73.3 Btu/2000 lbs/d =0.167 mL CO2/kg/h = 7.0 umol CO2/kg/h = 0.308 mg CO2/kg/h

** Specific heat (kJ/kg/°C) = 0.0335 x % water content + 0.8374; Specific heat in Btu/lb/°F = 0.08 x % water content + 0.2

Compatibility in Mixed Storage

Temperature compatibility group

0	7	13	20

Humidity compatibility group

Dry 60-80%	Moderate 80-90%	High 90-95%	Very high 95-100%

Not compatible with crops that:

Odours will be absorbed by:

Absorbs odours from:

Seasonal Availability

Ref	Country	Region (where given)	Start Season	End Season	Start Peak	End Peak
1#	Australia		January	December	June	November
1#	USA		January	December	-	-
1#	Netherlands		January	December	-	-
1#	Canada		January	December	July	October

Values taken from beetroot

References for beetroot, with tops

Values quoted in Detailed Report are taken from a compilation of the best set of figures from all references. This best set of figures is always referred to as Reference 1.

See Reference Report for full listing of all values, original references and alternate names.