

Optimal Fresh

The fruit, vegetable and fresh produce expert system



Detailed Report Printed on Wednesday, 19 December 2001

Crop beetroot

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

| | | |
|---------------|------------------------|-------------------------|
| (C) tain cai | (F) betterave rouge | (G) Rote Rübe |
| (E) beet, red | (F) betterave sucrière | (S) remolacha amarilla |
| (E) beetroot | (G) Rote Bete | (S) remolacha hortelana |

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 |
|----------------------|-----------------|---------------------|---------------------------------|------------------|
| 120 - 180 | 95 - 100 | -0.9 | 7 - 8 | Very Low |

† at optimum storage temperature

Other Properties

| Ref | Maturity stage | Air exchange * | Freezing Point (°C) | Ethylene production ** | Ethylene sensitivity | Ice compatibility | Water loss *** | % Water content | Bruising susceptibility |
|-----|----------------|----------------|---------------------|------------------------|----------------------|-------------------|----------------|-----------------|-------------------------|
| 1 | General | Very Low | -0.9 | Very Low | Low | Yes | M (3.0) | 87.6 | |

* 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%

Controlled Atmosphere

| Ref | Maturity stage | % O2 | | % CO2 | | Temp°C | | Benefit of controlled atmosphere |
|-----|----------------|------|-----|-------|-----|--------|-----|----------------------------------|
| | | min | max | min | max | min | max | |
| 1 | General | | | | | 0 | 0 | Slight |
| 1 | Fresh Cut | 5 | 5 | 5 | 5 | 0 | 5 | Moderate |

Reference notes

1 CA storage of beetroot cannot be advised, high %RH is best
 Sydney Postharvest Laboratory & Food Science Australia
 © CSIRO 2001 www.publish.csiro.au

Optimal Fresh

The fruit, vegetable and fresh produce expert system



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 | 12 | 20 | 32 | 34 | 51 | 61 | 71 | 117 | 149 | 214 | | | 3.77 |

* 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 | Netherlands | | January | December | - | - |
| 1 | USA | | January | December | - | - |
| 1 | Canada | | January | December | July | October |

References for beetroot

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.