

Optimal Fresh

The fruit, vegetable and fresh produce expert system



Detailed Report Printed on Wednesday, 19 December 2001

Crop potato

Maturity stage General

Category Vegetable

Plant Part Tuber

Usage Cooked, Dried,
Fried, Processed/ Canned,
Roasted



Picture source: Sydney Postharvest Laboratory, 1999

Botanical name *Solanum tuberosum*

Botanical family Solanaceae

Alternate names include

(C) ma ling shu	(G) Kartoffel	(J-R) potato
(E) potato	(J-K; B) O2S	(S) papa
(E) potato, culinary	(J-K) <^, 6^2S	(S) patata
(F) pomme de terre	(J-R) jaga imo	

Refrigerated Container/Coolroom Recommendations

Optimum product storage temperature

4.0 to 7.0°C

Temperature set point

4.0°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') = 15 m³/h = 10 cfm

12 m (40') = 30 m³/h = 20 cfm

Acceptable product temperature at loading into container

4.0 to 9.0°C

Key Properties

Storage time (days)†	Humidity (% RH)	Freezing point (°C)	Storage time at ambient (~20°C)	Ventilation rate
56 - 140	90 - 95	-0.8	28 - 29	Low

† at optimum storage temperature

Avoid injury, light, heat; higher temp. for processing

Other Properties

Ref	Maturity stage	Air exchange *	Freezing Point (°C)	Ethylene production **	Ethylene sensitivity	Ice compatibility	Water loss ***	% Water content	Bruising susceptibility
1	Immature		-0.6	Very Low	Medium			81.2	
1	General	Low	-0.8	Very Low	Medium	No	L (0.2)	79	High
1	Mature		-0.8	Very Low	Medium			77.8	

* 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	% O ₂		% CO ₂		Temp°C		Benefit of controlled atmosphere
		min	max	min	max	min	max	
1	General	19	21	0	0	4	8	None
1	Fresh Cut	1	3	6	9	0	5	Moderate

Reference notes

1 Air is the best atmosphere

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	Immature			35	35	42	62	42	92	53	132			3.56
1	General	11	26	12	20	17	22	20	37	24	44			3.48
1	Mature			17	20	20	30	20	35	24	47			3.44

* 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
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Humidity compatibility group

Dry 60-80%	Moderate 80-90%	High 90-95%	Very high 95-100%
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Not compatible with crops that:

Odours will be absorbed by: Apples, pears

Absorbs odours from: Pears

Seasonal Availability

Ref	Country	Region (where given)	Start Season	End Season	Start Peak	End Peak
1	Australia		January	December	-	-
1	USA		January	December	-	-
1	Canada		July	March	September	January

References for potato

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.