

Optimal Fresh

The fruit, vegetable and fresh produce expert system



Detailed Report Printed on Wednesday, 19 December 2001

Crop garlic
Maturity stage General
Category Vegetable
Plant Part Bulb
Usage Cooked, Flavouring, Fresh/ Raw, Preserve/ Jam, Processed/ Canned
Botanical name *Allium sativum* var. *sativum* L.
Botanical family Liliaceae



Picture source: Corel, 1998

Alternate names include

(C) da suan	(F) ail blanc	(J-R) ninniku
(C) saun	(G) Knoblauch	(S) ajo
(E) Poor Man's Treacle	(J-K) 6^X/7	(S) ajo comun
(E) garlic	(J-K) F F8	
(F) ail	(J-R) gaarikku	

Refrigerated Container/Coolroom Recommendations

Optimum product storage temperature 0.0 to 0.0°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
180 - 210	65 - 70	-0.8	21 - 28	Very Low

† at optimum storage temperature

Cloves sprout rapidly at 4°C; avoid long storage at this temp.

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	-0.8	Very Low	Low	No	L (0.4)	61.3	Low

* 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	1	2	0	10	0	2	Good, (+30 days)

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	10	30	17	40	25	56	37	76	42	90			2.89

* 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, celery, citrus, pears

Absorbs odours from:

Seasonal Availability

Ref	Country	Region (where given)	Start Season	End Season	Start Peak	End Peak
1	Australia		January	December	November	April
1	USA		January	December	-	-
1	Canada		July	February	August	October

References for garlic

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.