

Almond (*Prunus dulcis* [Mill.] D.A. Webb var. *dulcis*)

French: Amandier; Spanish: Almendro; Italian: Mandorlo; German: Mandelbaum

Crop data

Perennial. Harvested part: nuts

Transplanted in dormant season.

Flowers 3 - 4 years after transplanting.

Harvested 6 - 8 months after flowering.

Plant density (California, USA): 120-190 trees/ha.

Preferably grown on light to medium soils, pH 6-8.

Is adapted to a mediterranean climate; does best when irrigated, but is often grown on dry land.

USA (California) is the largest producer but it is also grown in Spain, France, Italy, Greece, Israel, and Bulgaria.

Plant analysis data

Plant analysis data - Macronutrients								
Plant part	Stage of growth	Source	% of dry matter					
			N	P	K	Mg	Ca	S
Leaf	Mid-season	Brown et al., 1953	2.8 (OS)	0.10 (OS)	3.0 (OS)	0.46 (OS)	1.61 (OS)	0.61 (OS)
Leaf	Mid-season	Proebsting & Serr, 1966		0.10 (OS)	1.0 (OS)			
Leaf	Mid-season	Weinbaum & Tate, 1964	2.2 (CVY)					
Leaf	Mid-season	Proebsting & tate, 1964						0.23 (OS)

Os = Optimum supply - CVY = Critical value (yield)

Plant analysis data - Micronutrients						
plant part	Stage of growth	Source	ppm dry matter			
			Mn	Zn	Cu	B
Leaf	Mature basal leaves	Epstein & Lillehand, 1942	96 (OS)			
Leaf	Mature	Hansen et al., 1962				23 (CVD) 38 (OS)
Leaf	Mature	Kester et al., 1961			2.6 (D) 3.9 (OS)	
Leaf	Mature	Procopiou, 1978		17 (OS)		
Hull	Mature	Kester et al., 1961			0.8 (D) 3.3 (OS)	
Kernel	Mature	Kester et al., 1961			1.6 (D) 12.1 (OS)	
Hull	Mature	Kester et al., 1961			1.4 (D)	

					2.7 (OS)	
Kernel	Mature	Kester et al., 1961			6.8 (D) 7.3 (OS)	
D = deficiency - OS = Optimum supply - CVD = Critical Value (deficiency)						

In California, Zn is a common problem.

Almonds are sensitive to excessive salts, especially of Na (leaf Na 0.30 % or more) and of Cl (leaf Cl 1.79 % or more).

In California, B toxicity (leaf B 87 ppm or more) and deficiency both present problems.

Present fertilizer practices

Almonds may be grown in cultivated or sod culture, so it may or may not be practicable to incorporate fertilizer into the soil. Fertilizer is usually given in a single dressing, sometimes in autumn, or, if in spring, then before bud-break. In general only N is applied annually, preferably as ammonium sulphate on alkaline soils or as ammonium nitrate on acid soils. P is preferably applied as triple superphosphate, and K as sulphate.

When supplying Zn as a foliar spray in mid-season, only ZnO should be used; ZnSO₄ burns the foliage.

In USA the basal fertilizer is:

45-112 kg/ha N.

1.2 t K₂O when problem occurs (California soils).

2 kg/ha B when problem occurs.

Zn deficiency is controlled by sprays of 19-29 g ZnSO₄/l in the dormant period and by foliar sprays of 6 g ZnO/l applied in mid-season.

Further reading

BROWN, J.W.; WADLEIGH, C.H.; HAYWARD, H.E.: Foliar analysis of stone fruit and almond trees on saline substrates. Proc. Amer. Soc. Hort. Sci. 61, 49-55; USA (1953)

HANSEN, C.J.; KESTER, D.E.; URIU, K.: Boron deficiency symptoms identified in almonds. Calif. Agr. 16(4), 6-7; USA (1962)

KESTER, D.E.; URIU, K.; ALDRICH, T.: Copper deficiency in almonds and its response to treatment. Proc. Amer. Soc. Hort. Sci. 77, 286-294; USA (1961)

PROEBSTING, E.L.; SERR, E.F.: Edible nuts. In: CHILDERS, N.F. (ed.), Nutrition of fruit crops. Horticultural Publications, New Brunswick, NJ; USA (1966)

WEIMBAUM, S.A. et al.: Nitrogen fertilization increases yield without enhancing blossom receptivity in almond. HortScience 15, 78-79, USA (1980)