Olive *(Olea europaea L.)*

French: Olivier; Spanish: Olivo; Italian: Olivo; German: Olive; Arabic: Zeitoun

Crop data

Perennial evergreen tree. Harvested part: fruit, which is either consumed after processing ('table'varieties) or used to produce olive oil ('oil'varieties). Some varieties are used for both purposes.

It is cultivated all around the Mediterranean basin and in similar agro- ecological zones elsewhere.

In the Mediterranean area the flowering period is May and harvest starts in late October. The life of the leaves is about 3 years.

Planting density varies widely with soil, rainfall, variety and cultural practices, ranging from 17 trees/ha (Sfax area, Tunisia) to 500 trees/ha (in intensive and irrigated groves).

The crop is adapted to diverse soil conditions.

The yield varies from one site to another and from year to year. Biennial bearing is common, especially in semi-arid zones and in unirrigated groves.

Nutrient demand/uptake/removal

Nutrient uptake - Macronutrients				
Country	**Source**	**g/tree/year**		
		N	**P2O5**	**K2O**
Tunisia (Sfax)	Rey	578	67	502
France	Bouat, 1968	300	60	200
Spain (Jean)	Llamas, 1983	310	75	560
Italy	Pantanelli	276	142	488

Plant analysis data

The leaves used in foliar diagnosis should be the third or fourth pairs on the twig, taken during the winter; lower and apical leaves should be discarded.

Work at Montpellier, France, by Bouat (1968) established as optimum values:
N = 2.10 %; P2O5 = 0.35 %; K2O = 1.05 % of dry matter.

In Spain, Recalde (1975) observed generally lower levels of nutrients but in the same relative proportions: N = 0.68-2.20 %; P2O5 = 0.13-0.42 %; K2O = 0.21-1.80 % of dry matter.

Normal ranges found in Mediterranean counties, according to Bouat, are:

Plant Analysis Data - Macronutrients						
Range	**% of dry matter**					
	N	**P**	**K**	**Ca**	**Mg**	**S**
Minimum	1.01	0.05	0.22	0.56	0.08	0.02
Mean	1.77	0.12	0.80	1.43	0.16	0.12
Maximum	2.55	0.34	1.65	3.15	0.69	0.28

Plant Analysis Data - Micronutrients					
Range	ppm dry matter				
	Fe	Cu	Zn	Mn	B
Minimum	40.0	1.5	4.0	5.0	2.0
Mean	124.0	9.0	23.5	36.0	11.7
Maximum	460.0	78.0	84.0	164.0	24.5

Fertilizer recommendations

Some authors recommend an annual application of fertilizers equivalent to two to three times the amount removed in the harvested crop.

J.G. de Geus (1973) gave as a general recommendation 500-1 000 g N, 300-600 g P2O5 and 500-1 000 g K2O per tree, and suggested that these rates should be doubled for very high yielding olives under irrigation.

Spain

In Spain De La Vega de Luque (1969) recommended:

Spain - Fertilizer Recommendations				
Production level	g/tree			
	Winter application			Autumn application
kg/tree	N	P2O5	K2O	N
< 15	200	200	400	300
15-30	300	300	600	300
30-50	400	400	800	400
> 50	500	500	1000	500

Morocco

Morocco - Fertilizer Recommendations				
	g/tree			
	November			February
	N	P2O5	K2O	N
Rainfed	400	350	1000	700
Irrigated	550	460	1300	900

Peru

Peru - Fertilizer Recommendations			
	kg/ha		
	N	P2O5	K2O
Young trees	50	30	-
Bearing trees	80-130	60	60

Tunisia

50 kg N/tree for each year of age up to production, and 2 kg single superphosphate (16 % P2O5) and 1 kg KCl per bearing tree (Min.Ag.Tunisia 1976).

Fertilizers should be applied to the soil surface under the leaf canopy. Kechaou and Tnani (1978) using a fertilizer application of 1.5 kg N (surface appli- cation), 0.9 kg P2O5 and 1.4

kg K2O (P2O5 and K2O in-depth application) per tree in Sfax, Tunisia, have shown, that placement of phospho-potassic fertilizers at a depth of 20-30 cm by a localizer plough had the effect of depressing the yield.

Organic manures are also recommended where available, at a rate of 50 kg/tree every 3 years, especially in irrigated plantations (Loussert and Brousse 1978).

Further Reading

BOUAT, A.: Physiologie de l'olivier et analyse des feuilles. Informations oléicoles internationales (1968)

DE GEUS, J.G.: Fertilizer Guide for the Tropics and Subtropics. Centre d'Etudes de l'Azote, Zurich, Switzerland (1973)

KECHAOU, M.; TNANI, M.T.: Effet de la fertilisation sur la production de l'olivier dans les conditions sfaxiennes sur l'olivier et les oléagineux. FAO, Mahdia, Tunisia (1978)

LOUSSERT, R.; BROUSSE, G.: L'olivier. Editions GP Maisonneuve et Larose (1978)

LLAMAS, J.F.: Basis of fertilization in olive cultivation. International course on the fertilization and intensive cultivation of olive. Cordoba, Spain, UNDP/FAO (1983)

MINISTRY OF AGRICULTURE, Tunisia: L'olivier. Brochure de vulgarisation (1976)

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