

PERSIMMON CULTIVATION: CURRENT SITUATION, IRRIGATION AND FERTILIZATION RECOMMENDATIONS

Recent estimates place **Spanish production** of persimmon around **650,000 tons**, of which about **90%** correspond to the Region of Valencia and the 'Rojo Brillante' variety. The persimmon production has increased exponentially thanks to **advances in post-harvest management**.

Persimmon production in Spain has increased exponentially, mainly due to the advances made in technical post-harvest, which eliminates astringency without loss of firmness and quality, allowing its commercialization over long distances and, in the Spanish case, exports to a large number of countries, in addition to the good price that is being paid to producers.

Although there are no official statistics, because this fruit is included within the section of "other fleshy fruits" in the Agrifood Statistics Yearbook, recent estimates place Spanish persimmon production around 650,000 tons, of which around 90% correspond to the Valencian Community and the variety 'Rojo Brillante'.

Reasons for the popularization of persimmon cultivation

Basically there have been **three reasons** that made it possible that in few years a crop of purely local interest, would be transformed into an export industry with high profitability:

- The selection in the 70s of the variety 'Rojo Brillante', of an **extraordinary quality**, that was carried out by the farmers of the Ribera del Xúquer from local autochthonous material.
- The development of a **post-harvest treatment for the elimination of the fruit astringency** without loss of firmness or quality, which has been the key factor in allowing the handling and long distance transport.
- The creation, in 1996, of the **Regulatory Council of the Apellation of Origin "Kaki Ribera del Xúquer"**, which guarantees the quality of the product and promotes its dissemination and commercialization.

Problemas derivados

The success of 'Rojo Brillante' should not hide the problems it presents basing all cultivation and marketing on a single variety:

- There has been **high genetic erosion** that has resulted in the **loss of local varieties**.
- From a commercial point of view, the monovarietal cultivation creates a **supply concentration**, whose **marketing season is reduced**, in the most favorable case, to **12 or 13 weeks**.
- In addition, single varietal cultivation and intensification of cultivation



have **phytosanitary risks**. The appearance in 2008 of the persimmon foliar necrosis disease caused by the fungus *Mycosphaerella nawae* -Fig. 1- highlights the dangers of this type of cultivation, without forgetting more recent pests events that are significantly affecting persimmon cultivation such as whiteflies (*Dialeurodes citri* -Fig. 2- and *Palarydores minei*) and the cottony mealybugs (*Planococcus citri*, *Delotococcus aberiae* -Fig. 3-, *Pseudococcus longispinus* -Fig. 4- and *Pseudococcus viburni*).



Figura 1.
Mycosphaerella nawae



Figura 2.
Dialeurodes citri



Figura 3.
Delottococcus aberiae



Figura 4.
Pseudococcus longispinus

the case of the *Mycosphaerella* fungus, it has turned from a serious problem to be controlled by means of adequate cultural techniques and preventive treatments with products authorized at the right time, following the recommendations of the notice system of the Valencian Institute of Agricultural Research (IVIA) and of the 'Conselleria de Agricultura'. The case of whiteflies and cottony mealybugs is quite worrisome today, and many efforts are being made to the control of these pests both with authorized phytosanitary products, increasingly restricted, such as through the employment of organizations predatory or parasitoid organisms.

Links of interest to pests, diseases and their control

<http://gipcaqui.ivia.es/area/plagas-principales/pseudococcidos>

<http://agroambient.gva.es/va/boletin-de-avisos>

Cultivation within the scope of the GOINNOWATER project

Focusing on the plots on which the monitoring is being carried out, development and study of the GOINNOWATER project in the La Vall d'Albaida region, one aspect to take into account is to **improve the profitability of the cultivation and improve water and energy use efficiency in irrigation**. Average yield in the main persimmon producing area of the province of Valencia, is around 30,000 kg / ha (about 2,600 kg / hg).

The data obtained from the productions per surface (Table 1), show that there is ample room for improvement in the yields of this crop, and that with small improvements that can be applied with the GOINNOWATER project, the results can become noticeable.

TABLE 1. Persimmon yields in Vall d'Albaida study plots (kg / ha)				
Crop Yield	2017	2018	2019	Average
Persimmon	14.784	12.017	16.006	14.299

Recommendations on persimmon irrigation management

In commercial plots and applying conventional irrigation, the crop water requirements of persimmon crop are estimated at 450-500 mm per year. Table 2 shows an indicative irrigation schedule.

TABLE 2. Orientative irrigation programming, based on historical climatic data in the interior of the province of Valencia (regions of the Ribera del Júcar). Averages 2000-2013.

MONTH	ETo (mm)	Pluvio. (mm)	Irrigation requirements (m ³ /ha)		
			Sapling	Young	Adult
January	46	37	-	-	-
February	57	36	-	-	-
March	84	50	-	-	-
April	104	52	52	145	119
May	122	47	113	357	468
June	150	11	201	667	998
July	165	9	287	957	1.445
August	139	12	253	844	1.267
September	101	59	193	620	858
October	68	98	89	270	320
November	46	50	13	17	-
December	38	40	-	-	-
TOTAL	1.130	502	1.200	3.877	5.475

In cases where field treatments are carried out to delay the ripening of the fruits, the leaf of the tree will remain active during longer, which leads to increased irrigation needs.

Interesting links on irrigation management

<http://riegos.ivia.es/necesidades-de-riego>

Recommendations on persimmon fertilization

Any fertilization plan (Tables 3 and 4) **should always be considered indicative**, being susceptible to a progressive modification after the **response of the crop** (in yield, crop quality, vegetative growth) and the **results of the nutritional status** (foliar analysis, soil analysis, irrigation water analysis)

TABLE 3. Orientative fertilization doses of persimmon in the Valencian Community for medium fertility soils (kg / ha)

Irrigation system	N	P ₂ O ₅	K ₂ O	MgO
Surface irrigation	200-300	80-120	120-150	20-30
Drip irrigation	170-250	60-90	120-150	20-30

TABLE 4. Nutrient requirements for persimmon in full production in drip irrigation in a soil of medium fertility

Month	N	P ₂ O ₅	K ₂ O	MgO
March	9	4	6	0,8
April	18	8	10	1,2
May	27	12	12	1,6
June	36	16	18	2,4
July	36	16	37	5,0
August	36	16	37	5,0
September	18	8	30	4,0
TOTAL	180	80	150	20

