

Water requirements pecan nuts per production area, water rights and legal requirements

Water requirements of pecan nuts in South Africa

Very limited information is available – only two studies were done to date, one in Mbombela and the other in Cullinan.

Research about the water requirements for the Vaalharts and Upington areas have commenced.

Current recommendation

Until the research results are available the recommendation is based on the available information and the experience of producers.

Based on climatic conditions, South Africa can be divided into three main regions:

- The wet eastern area
 - ❖ Includes some areas of Natal, Mbombela and Makhado
- The moderate central area
 - ❖ Includes areas like Cullinan, Parys, Potchefstroom, Kroonstad, Ventersdorp, Klerksdrop and Bloemfontein
- The warm and dry western area
 - ❖ Includes areas like Vaalharts, Hopetown, Douglas, Prieska, Groblershoop, Upington and Augrabies.

In each area there are micro climatic zones where the needs may differ from the larger area.

What is the Total annual requirements?

It is essential that the available water is sufficient for the total requirement – also in dry years

What is the Maximum daily requirement?

Irrigation systems must be designed to meet the daily maximum need during warm and dry periods

Water requirement per South African regions

Eastern region	Annual requirement:	Meter³ per hectare	10 000
	Maximum Daily requirement:	Liter per tree per day:	460
Central region	Annual requirement:	Meter³ per hectare	12 000
	Daily requirement:	Liter per tree per day:	600
Western region	Annual requirement:	Meter³ per hectare	15 000
	Daily requirement:	Liter per tree per day:	800

How big an area must be irrigated?

By irrigating at least 60% of the canopy cover of the tree is a safe guideline. It gives you a big reservoir for storing water.

Water requirement in Texas

Mature trees

- Standard annual recommendation is 13 000 to 14 000 Meter³ per hectare
- Most of the water will be used in the growing season (225 days)
- To ensure economic production of quality pecan nuts, irrigation must prevent water stress
- Over irrigation and waterlogging depletes soils of oxygen and is just as detrimental as drought

Mature trees need water at 5 critical periods:

- Bud break in spring to initiate strong, vigorous growth
- Nut sizing to develop a satisfactory size
- Water stage to prevent nut drop
- Kernel filling to allow full development of the kernel
- Prior to shuck split to decrease leaf drop and stick-tights

Young trees

- With timely water application young trees can grow rapidly
- Watering once a week, allowing air to re-enter the soil, is better for young trees
- General water rate in well-drained soil (liter per week)

Year	Oct	Nov	Dec	Jan	Feb	Mar	Apr
1	25	25	50	100	100	50	25
2	50	50	100	200	200	100	50

- From year 3 follow the irrigation schedule for mature trees but only water the area up to 1 meter outside the drip line of the trees

Water rights and legal requirements

- Ensure that the land you buy have water rights.
- If irrigation is done from boreholes, ensure that they are registered for the purpose that you want to use them for.
- If any uncertainty exists, contact DWS.
- Obtain legal advice if needed.