

AVOCADO GROWERS TECH NOTE

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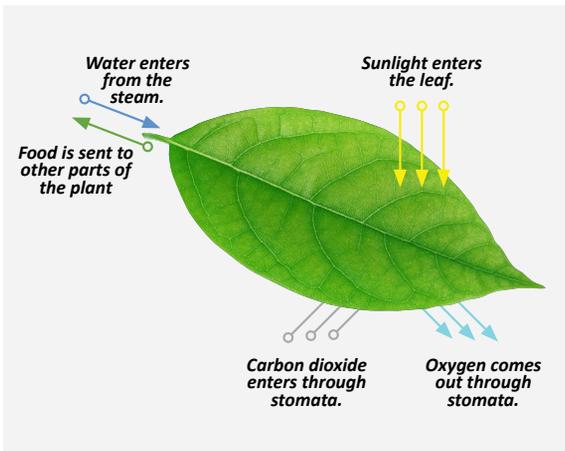
JP EXPORTS

Why full sun is the key to avocado pruning

It is easy to list some obvious advantages of pruning avocado trees:

1. cheaper and easier picking
2. less environmental damage like wind rub
3. more effective pest control to name a few.

Ultimately pruning increases marketable yields; doing nothing will lead to a decline in profitability.



Above - Diagram 1: Generalised drawing of leaf showing inputs of photosynthesis and respiration.

(Roahs Biology)

What does science tell us about pruning avocados?

Stomata are tiny pores on the underside of Hass avocado leaves that allow carbon dioxide (CO₂) to enter the leaf and oxygen (O₂) and water (H₂O) to be released into the atmosphere. The flow of these products into and out of the leaves is vital in producing plant food (carbohydrates) in the presence of sunlight (photosynthesis). Stomata need to remain open in the presence of sunlight for avocado trees to be productive. An avocado tree under water stress for instance, will close its stomata to conserve water and so photosynthesis and productivity will stop.

Simply put:

'Stomata control productivity in avocados.'

What relevance does this have to avocado pruning?

From Californian Avocado Commission Research: 'Avocado leaf stomata close quickly in response to decreasing light.'

- Shaded leaves have low productivity

'Sudden increases in light (sunflecks) do not result in increased productivity because avocado stomata are slow to open.' 'Response time takes from several minutes to almost an hour depending on leaf age.'

(Mickelbart)

- Creating "windows" into the canopy or vase type pruning are not efficient for avocados

Avocados have evolved as a sub-storey species in rain forests where they had to compete for sunlight. They grow short-lived leaves that shade canopy and reduce the number of well-lit shoots that are capable of flowering.

(Schaffer and Whaley, 2003)

The Californian research suggests that a central leader system is an efficient growing method by allowing more leaves to be in full sun.

However, Hass trees do not want to grow to a central leader system, unlike Reed, Sharwill or Zutano. Hass trees (due to apical control) want to grow like a dome and set fruit high on their extremities. Growers need to manipulate trees by pruning but must remember that they revert to a dome-like structure.

Aggressive annual pruning of areas of avocado trees is required to allow full sunlight to as many leaves as possible to maximise productivity.



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