

Choosing a Location for Avocados

Dean F. Palmer

Pacific Rural Press.

The avocado is often spoken of as the aristocrat of salad fruits. The avocado is truly aristocratic in its requirements as to soil, water, and climate, and the most careful selection of these is not only desirable, but absolutely essential for its successful growth. Each of these is of such importance that failure to fulfill its requirements with regard to any one usually proves a limiting factor to success.

Locations suitable for avocados must have mild winters and cool pleasant summers, with only moderate daily and seasonal temperature and humidity fluctuations. This requires the tempering influence of the ocean. The fact that the avocado is sensitive to hot summer temperatures is probably one of the main reasons for its failure in the hot dry interior sections. Intense heat waves in the more favorable districts often cause serious damage. Atmospheric humidity is also an important requirement, as production is usually heavier in the more humid coastal and semi-coastal districts than in the hotter, drier interior sections. The avocado is quite subject to wind injury and it is important in selecting an orchard location to avoid as far as possible windy sites and localities.

In order to avoid the low temperatures of winter, hillsides are preferred, although as much protection as possible from the prevailing winds is desirable. The desirability of a hillside in fairly close proximity to the ocean, throws avocado orchard sites into direct competition with desirable homesite locations. The man choosing a small acreage for a homesite does not expect to make his home pay interest on his investment, and he is therefore an unfair competitor for the grower of avocados, who must do so.

The avocado thrives on a rather wide range of soils, but it apparently does best on a soil of medium texture. While the surface soil is of importance, a perfect surface soil underlaid with a hardpan or otherwise undesirable subsoil, is unsuited. Avocado soils should be deep and well drained, for the avocado is extremely intolerant to poor drainage and cannot stand wet feet for more than a day or two at the most. Where citrus trees endure a week or two of overflow, the avocado is killed within a couple of days.

Professor W. T. Horne, of the Citrus Experiment Station, in his bulletin on avocado diseases in California, suggests a close relationship between unfavorable soil moisture conditions and such troubles as "Melanorhiza," "tipburn," "Mottle-leaf," "chlorosis," "cankers," "asphyxiation," "Thompson spot" and "end spots." Deep, well-drained soils are sometimes rather hard to find on hillsides, as oftentimes the surface soil has been removed by erosion. When hillside soils are underlaid with an impervious layer, the water seeping down from the hill above is deflected towards the surface, creating a very high water table.

The best method of examining a soil is with the aid of a soil auger. By adding more pipe to an ordinary auger, it can be made to extend down eight or ten feet, for the purpose of locating the water table. The water table should be at least eight or nine feet below the

surface, or deleterious salts are apt to be brought to the surface by capillary movement. Capillary movement of water is cut off where the water table is eight feet or more below the surface.

Besides requiring a deep, well aerated soil, the avocado is extremely intolerant to certain chemicals which are generally spoken of as alkalies. The most harmful of these seems to be sodium chloride or common salt. This is now known to be one of the most important causes of tip-burn. Accumulations of sodium chloride are usually found in connection with conditions of poor drainage. The avocado is also very susceptible to injury from excessive carbonates. When the soil is too high in carbonates, the trees develop a condition which is called lime chlorosis. The foliage becomes yellow and the trees lack the healthy green appearance of a normal tree. Heavy applications of sulfur or sulphate of iron in some cases will relieve this condition, providing the carbonates are not too high, and good drainage is available. The wisest plan, however, is to refrain from planting avocados in soils which are high in carbonates. A good method of testing a soil in the field is to carry a small bottle of hydrochloric or muriatic acid with you and drop a couple of drops on the soil. If it effervesces, carbonates are present, in quite large amounts, and avocados should not be planted there. Some people carry a lemon around with them, and use lemon juice as a source of the acid. The latter, however, is not a very satisfactory method of testing. Lime chlorosis is due entirely to excessive carbonates, and should not be confused with excessive soil salinity or alkalinity, as the carbonates do not necessarily run up the alkalinity of a soil very high. Professor E. E. Thomas, of the Citrus Experiment Station is now making a study of this problem.

The avocado, I believe, requires a little more water than citrus and it requires water of a high quality. Mr. Harold Wahlberg, farm advisor of Orange County, in his 1934 "Summary of Cost and Management Efficiency in Avocado Production" report shows that eight of the highest producing orchards under his observation used an average of 19.8 acre inches per year, while the eight lowest producing orchards used 10.7. The average of all orchards was 15.3 acre inches. The water requirements for some of the lighter, well-drained soils, will be considerably higher than this; some lands using as high as 36 acre inches per year. One therefore should determine the availability of an adequate supply of water; with special reference to the particular location chosen for his orchard. Not only is an adequate supply of water essential, but the composition of that water is of utmost importance. Much of our available irrigation waters, especially those developed in close proximity to the ocean, are high in salts, particularly sodium chloride, which, as I have stated above, is injurious to the avocado if present in high enough concentration. Any water showing in excess of 100 parts per million of chlorine should be considered dangerous, particularly if in combination with other salts.

As one can readily see, to find all of these qualities in any one locality is a difficult matter, and when such a location is found, it is so desirable from every other standpoint, that the land is usually high priced. However, the selection of a proper location which will insure freedom from many of the physiological troubles brought on by unfavorable conditions is most important.