California Avocado Society 1949 Yearbook 34: 101-103

NON-TILLAGE OF AVOCADO ORCHARDS

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The soil management program for many citrus orchards in Southern California is one of non-tillage. The practice involves laying out the land for irrigation using broad shallow furrows for the distribution of water, except where the soil surface is left smooth for sprinkler irrigation.

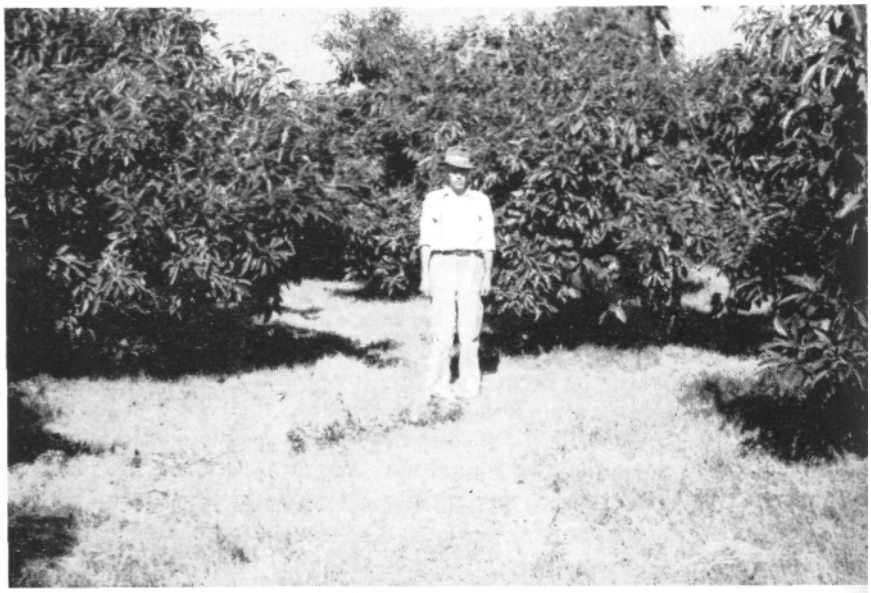
In avocado orchards, sprinkler irrigation is the usual practice. Because of the nature of the growth of the avocado tree, the amount of fallen leaves is much greater than with citrus; and therefore in bearing orchards the ground becomes covered with an ever increasing layer of fallen leaves. In bearing orchards of uniform size trees, weeds are usually shaded out and covered with leaves, except for small areas and on the edge near a road or open space.

Orchards of young trees which only partly cover the ground have considerable space between the rows. In this case, the rows are considered to run parallel to the usual way the sprinklers are placed in the orchard. More and more growers are controlling weeds around the young trees by means of an oil spray. Hoeing is also practiced, but in hoeing such deep rooted weeds as Bermuda grass and others of like nature, the avocado roots may be damaged. From the standpoint of time, an oil spray is more efficient than other methods, especially when used on perennials such as Bermuda already mentioned, and ragweed. These weeds compete quite seriously with the young avocado tree since they spread by means of underground stems, and therefore take from the soil moisture and certain plant food elements needed by the young tree. The greatest competition between tree and weeds is, of course, within a short distance of the tree; but usually the best plan is to control the weeds between the trees in the tree row. Care should be exercised to keep the oil from getting on the trunk or the leaves.

There are various methods of handling the area between the rows in the young orchard: (1) A permanent cover is one type of soil management employed. It may be started by planting some variety of cover crop which is irrigated as a part of the orchard irrigation program. However, eventually under this program Bermuda grass takes over and crowds out nearly all other varieties of plants. With a permanent cover, especially when the land is sprinkled, mowing will be necessary if the sprinklers are low. (2) In some orchards the sprinklers are underneath the trees and the land between rows is not irrigated. In this case, a so-called continuous cover crop is maintained and consists mostly of weed growth, but grows very little during the irrigation season since it receives little or no irrigation. Burr clover has been found to be a good crop to grow as a part of this type of a program as it grows well during the winter and reseeds the land for fall growths. If Bermuda, rag weed, or other perennial gets started with this program eradication methods should be adopted. (3) Discing or cultivating to keep down weed

growth in the avocado orchard has been practiced just as is very frequently done in the citrus orchard. This practice, however, is less frequently carried on because as more has been learned about the growth of avocado trees, it has been found that the surface soil is full of roots which are vital to the tree. If these surface roots are destroyed the loss to the tree may be serious. Therefore, any operation which removes them should not be practiced.

Mulched basin, clean culture method of handling young trees.



Bermuda grass crop in 16-year-old orchard at Fallbrook. Sprinkling and mowing are practiced.

Another factor concerned with clean cultivation or discing is that a large acreage of the avocado orchards is on hilly lands, and if the surface soil is tilled, soil erosion may occur. The loss of surface soil would be a serious one, as would the damage done if gullies were to form.

In some areas morning-glory is a pest and will grow under dry soil conditions. This weed can very easily be controlled by means of applications of 2-4-D, but one or two follow up applications may be necessary.

For the control of weeds on a 10 or 20 acre orchard, a spray outfit with a 100 gallon tank will usually be adequate, but should have an agitator. One tank can be used either for oil or 2-4-D. Rag weed is controlled with 2-4-D, also; but oil base weedicides are usually used for other weeds.

A soil management program that will suit one set of conditions may not be applicable to another even in the same locality. Soil texture and structure as well as the grade may all be factors to consider. Too much cannot be said regarding care in keeping materials from coming in contact with the tree.

In starting an eradication program involving Bermuda, morning-glory, ragweed, and other perennials, the grower should plan to treat them as often as new growth shows above the surface of the ground. Any other program will be a waste of time and money. Any weed control program using a weedicide will be more costly for the first year or two than cultivation or hoeing, but if followed religiously, in the end it will cost less and be more economical.