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QUESTIONS AND ANSWERS

Q. What varieties of avocados are recommended for planting in Orange County?

A. The Fuerte and the Hass in the northern part of the county and the Fuerte in the southern part.

Q. When should I begin to thin my avocado orchard? It is in northern Orange County.

A. The time to thin a grove is when the tree branches approach each other and nearly touch. At this time the amount of light reaching the lower branches and leaves has been reduced to such an extent that they will begin to shade out and to die back. The poorest producing trees should be the ones that are removed first, regardless of the pattern of removal.

Q. How often should I irrigate my avocado trees? They are Fuertes and the trees are large and beginning to crowd.

A. The best method of determining time for irrigation is by observing the soil through the use of a soil auger. Remember that the upper 12 to 18 inches is the most critical area because the majority of feeder roots are massed in that area. This area should be kept moist at all times. Deep examination of the soil will be necessary once in awhile to see that that area never dries out but has some water available for emergency use by the trees during hot weather. There is no rule of calendar that can be used satisfactorily under all conditions. Your own experience will have to serve as a yardstick for when to irrigate your particular orchard.

Q. What varieties do best in the Santa Paula area?

A. Fuerte, MacArthur, and Hass.

Q. How far apart should a permanent planting of Fuerte trees be on a deep soil?

A. Forty to fifty feet, depending upon the experience of growers and the speed of growth in your area.

Q. I am planning to plant several varieties on a relatively large acreage. Should I alternate the varieties or plant each variety in a block of its own?

A. Planting solid blocks of each variety makes all orchard operations easier and eliminates the problem of deciding which variety to remove when they begin to crowd. If one variety does not do well, the entire block can be topworked and handled much more readily than if the orchard were interplanted. In case both do well, it is easier for growers to remove the poorest producing trees in a block than to have to remove a high producing tree because the trees are crowding.

Q. Should I mulch my newly planted avocado trees?

A. Yes, a mulch of straw or other bulky organic matter will reduce the loss of moisture from the top 3 to 6 inches of soil around the young tree. This area of soil is critical

for newly set trees because it contains a large portion of the roots. The avocado likes to send its roots out near the surface of the ground, and if this area dries too frequently the roots will be slow to develop on the young trees in this area. In coastal counties this may not be too important since the ground will not dry as rapidly where the climate is cool and moist. In some areas it has been noticed that a heavy mulch of organic matter keeps the ground cool in the spring so that the trees are a little slower to start growing. In most cases, however, the advantage gained through the summertime will offset most of the disadvantages.

Q. Which will make better trees in the long run—standard budded and headed trees or tip-grafts?

A. If properly cared for when young, both can be developed into satisfactory trees.

Q. Does oak-root fungus *(Armillaria mellea)* attack avocado trees?

A. Yes, under certain conditions. The conditions which favor the infection of oak-root fungus in avocado trees are not fully understood. The fungus has been observed numerous times on producing avocado trees and has been found on two-year-old seedlings in an abandoned nursery as well as one-year-old seedlings planted in an oak-root fungus infected spot. There have been many orchards in some areas planted in land where the citrus trees have been killed out by oak-root fungus. In only a few cases have any of these trees been infected by the fungus. This has led to the conclusion of many that avocados are highly resistant to the disease. Because everything is not known about the conditions of infection in all districts, growers should use caution in planting avocados in oak-root fungus infected land unless the district has a history that shows it can be done successfully.

Q. At what spacing should I plant avocado trees in Santa Barbara County?

A. There is no one pattern or optimum distance for spacing that is suitable for all conditions. The yield per acre is the dominant factor in determining net return to the grower. The yield per acre from young trees can be increased by close planting. One procedure has been to plant Fuertes 20 x 20 in deep soil, and 16 x 16 in soils not expected to produce large trees, and a planting of 12 or 16 feet on the square for the Rincon and MacArthurs, depending upon the soil depth. This is done with the intention of thinning out the poor producing trees without regard to pattern when they begin to crowd.

Q. How often should I water avocado trees the first year after planting?

A. Watering the trees once a week is a fairly safe plan provided too much is not applied at any one time. Watch the first six inches for soil dryness and below 14 inches of depth for too much water in the soil. On deep, well-drained soils there is little danger of too much irrigation, but on the shallow soils this can be a serious problem which will reduce the growth of the young trees.

Q. Should the trunks of newly planted avocado trees be whitewashed?

A. No, unless it is not practical to provide other forms of protection from sunburn. In some areas along the coast the growth has been retarded on young avocado trees which were covered with whitewash. Shading the bud union and the lower portion of

the scion at the time of planting is desirable. Whitewash applied only on the south side of the trees appears to be satisfactory for sunburn protection and does not retard the growth of the tree too much.

Q. What avocado varieties are recommended for planting in Riverside County?

A. The experience with avocados is so limited in Riverside County that no recommendation can be made at this time. Some Fuertes have been grown successfully in the Corona district and are being tried more extensively in that area. Other parts of the county have no good histories on which a recommendation can be made. Any plantings would have to be done on an experimental basis.

Q. When is the best time to topwork low-producing avocado trees?

A. The spring of the year after the danger of frost is past. The work should be done by the middle of May if possible. This is the time of year when the growth would be the greatest and the trees will be much larger by the time of the first frost the following year and should be able to withstand considerably colder weather than young grafts.

Q. What is the cause of tip-burn on avocado leaves?

A. Most of the common leaf burning in San Diego County and in a few other places is the injury or toxic effect of chloride salt accumulated in the leaf. The occurrence and severity has increased in recent years due to lack of sufficient rainfall to remove salt accumulations from the root zone area, and the increased salt content of the irrigation waters themselves.

Factors that appear to increase the severity of tip burn are low soil moisture, particularly in the fall; warm, dry weather in the fall; or any condition that even temporarily weakens the tree, for example, a very heavy crop.

In some other areas, sulfate is often the salt that produces injury. A burning between the veins of leaves and a die-back of shoots observed in some districts is associated with high sodium content.

Q. How can a grower tell if his trees are deficient in zinc or manganese?

A. Zinc deficiency in avocados is easily recognized. It shows up on the leaves—particularly on the terminal growth, where the leaves are stunted. The distance between where the leaves arise from the stem is shortened from normal, and the leaf will have yellow spots between the veins. The margin between the yellow and the normal green parts of the leaf is rather definite. It has not been proved to everyone's satisfaction that manganese deficiency exists in avocados. If it does exist, how to recognize it is not known.

Q. Has spot fumigation of soil proven successful in replanting where trees have died due to root rot disease?

A. Not to date. Spot fumigation does permit trees to grow fairly well for several seasons before the roots show the presence of the fungus. It cannot be recommended as a practice at the present time.

Q. I've heard that gopher control isn't important in avocado culture. Is that true?

A. In our opinion, gopher control in avocado orchards makes sense. In young orchards it is necessary to avoid serious and costly damage to trees. In the older orchards gophers are certainly a nuisance, and perhaps they indirectly affect the orchard by causing areas to be too wet or too dry, by spreading the cinnamon (root rot) fungus. It may be entirely coincidental, but virtually all of the older orchards that are in trouble have a large and energetic gopher population.

Gopher-eaten avocado roots

Q. A few trees in one section of my orchard appear to be starting a decline. Can I have the roots tested for the presence of the cinnamon fungus. What steps should I take?

A. There is a relatively simple laboratory test for the presence of the cinnamon fungus in the rootlets. However, there are no laboratories in San Diego County that make this test for growers. There is no good test at the present time for the presence of the fungus in soil.

Steps to be taken may be along the following lines:

1. Check the soil, mainly the subsoil, for presence of excessive moisture, which would reflect poor drainage conditions.
2. Inspect the soil area where there would normally be an abundance of feeder roots. If healthy looking roots and rootlets are absent or in a minority, the root rot fungus can be suspected.
3. A check by laboratory tests for the fungus would be desirable.
4. Dry the area out in an effort to minimize the activity and spread of the cinnamon fungus in the soil.
5. If root rot is pretty certain, consider eliminating the tree or trees completely and drying the area thoroughly.

Q. Should young avocado trees be staked to protect them from wind, and to train them to grow upright? Some experts say the tree is stronger if it has no stake to depend on for support.

A. Growers with young trees exposed to wind are advised to stake them. Trees have been whipped off at the bud union by wind where support was not given. (A good method of tree staking is illustrated. Note, in the close-up, that the tree is loosely tied to the cross-wire with a strip of burlap.) Protection for young trees can also be given by putting burlap, cardboard, or newspaper mats around them, as shields against both wind and sun. The question of the value of stakes for training trees is so far without a definite answer.

Q. I've been told that my trees and soil are lacking in magnesium. Is this deficiency common?

A. Apparently not. In the field, it is not recognized as a serious or even definite deficiency. It is known that trees in some areas and at certain times of the year show a deficiency pattern that upon analysis could be considered due to a lack of magnesium. It has not been demonstrated that soil applications of magnesium will prevent a recurrence, or that there is any benefit from the application of such materials.