

## Quick Propagation of Avocado Nursery

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Avocado trees can be produced for field planting, with a developed budded top in from seven to nine months by a new method that I have followed during the past two growing seasons. This has been done by combining a few of my ideas into an operation that results in producing a young, vigorous, budded tree ten to twelve inches high with a complete root system contained in a tar paper carton. The fundamental principles in this method are the application of heat to force germination and plant development, a method of grafting that allows the bud to be applied on a very small seedling, and the fact that the tree is kept within a carton of soil until it is planted in the field. This allows the whole project to occupy a relatively small area and also makes it movable to simplify the work at all stages of development.

The first commercial lot of these trees was started in October 1946 and planted in the field in April and May of 1947. I, personally, planted 300 of them in the Fallbrook area in April. They have since made a very good growth, and now, December 1947, are sturdy, well established three foot trees at fourteen months from seed.



A group showing two typical seedlings and two with grafts applied. Seed planted in September 1947, picture taken in December 1947.

The general method of producing these trees can be described best by a step by step description as follows:

First, a closed building is necessary, either glass or suitable substitute, of sufficient size

to contain the necessary number of plants and provide suitable working space. It is desirable to have some heat available to keep night temperatures up to proper growing conditions.

Containers for seed planting are made next and filled with a prepared soil mix. The container is made of a twelve inch by sixteen inch sheet of thirty pound building felt stapled together to form a five inch by twelve inch open end cylinder. This is packed full of soil mix that has been prepared from two-thirds good loam soil, one-sixth part peat moss and one-sixth part ground dairy manure.

The seed, of a known good Mexican tree is planted, one seed to a pot, about one-half inch below the top of the cylinder and covered with a small amount of peat moss to hold moisture. These planted containers are arranged in convenient beds in the hot house and kept watered sufficiently to germinate the seed and develop the seedling. The seeds are preferably gathered and planted in September or as soon as they are available in the fall. A minimum amount of weed pulling is necessary to keep the containers clean.



Part of a planting of 300 trees at San Luis Rey Heights—14 months from seed. Seed planted October 1946, grafted January 1947, planted in the field in April, photographed December 1947.

The seedlings develop rapidly and are ready to graft by the new method in December or January. At this stage the seedlings are about ten inches high and pencil thickness at the base. The graft union is made by cutting the seedling off on a slanting cut about 1/2 inch long, two or three inches above the container and matching the seedling cut with a similar cut on a bud stick of the same size. The cut on the bud stick is made just below and in back of the desired bud. These two similar cuts are then held together in perfect

alignment and wrapped in place with a short piece of thin golf ball rubber. Next, the top of the bud stick is cut off above the selected bud and this cut is then sealed with a good sealing compound. These buds begin to show growth in about five weeks and the wraps are removed shortly after.

The first cycle of growth develops to about ten inches in ninety days from the time of grafting. Then this top is tied to a small stake that has been inserted in the ball for that purpose. At the stage when the growth is fully hardened off and a second cycle just starting, the tree is ready to plant directly into the field.

Field planting is a very simple operation. The tar paper container is slit on one side, placed in a prepared hole, the paper loosened and removed and the dirt lightly compacted around the ball. Next, a basin is made and the tree properly irrigated. It must not be forgotten that this is a very young, small tree and that extra care is necessary to maintain proper growing conditions.

The root system developed in these cartons does not become pot-bound. The central taproot goes straight through the ball and partially into the ground below. The side roots reach the side of the carton and then turn down. In no case do they have a tendency to curl around and become bound.

Growers and nurserymen alike have shown a remarkable amount of interest in this work during the past season. This can be best illustrated by the fact that others have planted approximately 50,000 seeds by this method this fall as against only 4,000 that I planted last season.

This method appears to be practical and to produce avocado trees much quicker and cheaper than the conventional nursery practice, but a word of caution is also in order. Timing of the various operations appears to be very important as several critical stages seem to occur in the work. Also, proper selection of bud wood is important. It has been definitely proven that these trees can be grown to give satisfaction to the orchardist. As this method is tried and more experience gained the production of these trees can become part of the standard nursery practice.