

## Avocado Rootstock Trials in Santa Barbara County

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Increasing interest in avocado rootstock trials has resulted in requests for more experimental trees than it has been possible to grow.

One request which could not be met was made in the spring of 1945 by the Avocado Department of the Santa Barbara County Farm Bureau through its chairman, L. M. Cavaletto. However, a cooperative arrangement between the growers and two agencies of the University of California, namely the Division of Horticulture at Los Angeles and the Agricultural Extension Service, Santa Barbara, made it possible to establish a nursery in the county. Facilities for seed germination and land for the nursery were made available free of charge by Stanley and John Shepard. Expenses for propagation and supervision of the nursery were the responsibilities of the University.

This cooperative project proved to be very successful, hence a brief account may be of interest.

### Rootstock Varieties

All Guatemalan seeds were furnished free of charge by the Calavo Growers packinghouse. Although none of the fruits showed symptoms of sun blotch, the possibility that some came from affected trees cannot be excluded. All Mexican seeds came from trees in the U.C.L.A. orchard except the Ganter variety, which was donated by the San Joaquin Fruit and Investment Company, Tustin. A few Topa Topa seeds were obtained from the Topa Topa Ranch, Ojai, by R. J. Chapman, Calavo Field Representative. E. R. Eggers secured some Mexicola seeds from a tree at Upland.

Altogether 1449 seeds were used, 824 of them Guatemalan and 625 Mexican. The following varieties were used for rootstocks:

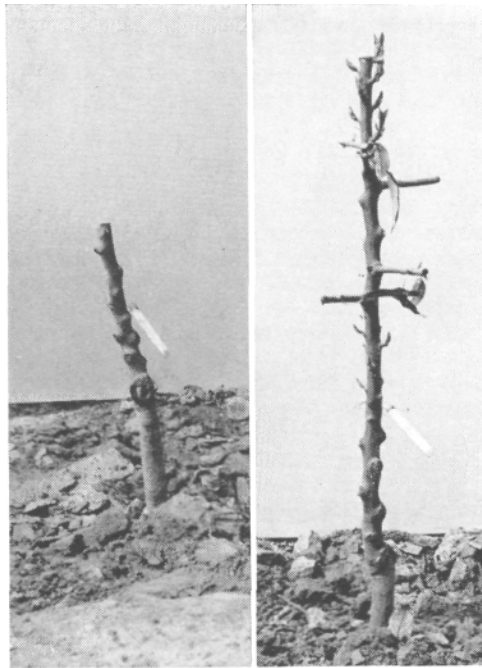
	<u>Guatemalan</u>	<u>Mexican</u>
Anaheim	Lyon	Blake
Cabnal	MacArthur	Duke
Carlsbad	Nabal	Ganter
Challenge	Sharpless	Mexicola
Dickinson	Spinks	Topa Topa
Hass	Taft	
Itzamna		

## Seedbed and Nursery

The seeds were sprouted in paper pots  $2\frac{3}{4}$  x  $2\frac{3}{4}$  x 12 inches and placed in cold frames which were covered with canvas.

Rather than take a chance on spoilage in storage, the seeds were planted as they became available. Thus all Guatemalans were planted several weeks before the Mexicans. This proved unfortunate because it resulted in an uneven nursery. Practically all Guatemalans and only a few Mexicans were budded by January 1947. The rest were then too small. When the latter reached budding size a few months later, no budwood was available. When finally budded in August 1947, many of them were quite large. As a consequence many buds failed.

The MacArthur was chosen by the growers as the scion variety. All buds came from trees on the Bishop-Corona Del Mar Ranch, Goleta. Budding was done by Harlow Hartman, who is now Senior Superintendent of Cultivation in the Extension Service.



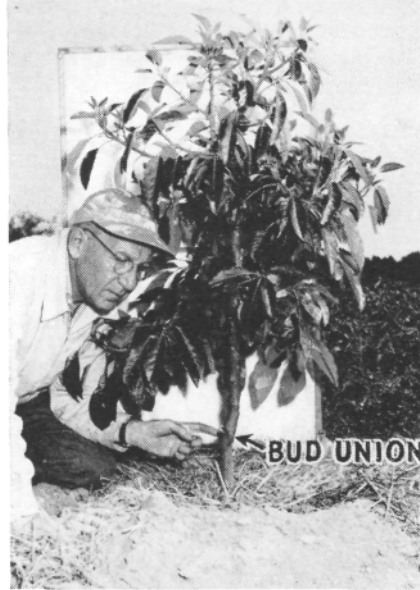


Fig. 1. Upper: Standard budlings severely cut back.  
Lower: Same a few months later.

A summary of seeds and seedlings planted and budlings obtained, given in Table 1, may be of interest. The percentage of seedlings suitable for lining out in the nursery varied from 24-90 for the Guatemalan and 27 to 92 for the Mexican varieties. It is not intended to prove that some varieties produce a greater percentage of usable seedlings than others. The table is merely a record of the results obtained in the project. The percentage of good budlings obtained varied from 7 to 75. The low percentage is believed to have been largely due to budding on large stock.

### Orchard Plantings

The illustrations show the types of trees at planting and several months later. The standard trees were more severely pruned than is generally done by nurserymen. Most of the so-called "Tied-up Buds" (immature budlings) were on Mexican stock budded late. The reason for planting them was that, due to change in ownership, the nursery site had to be vacated. Practically all the plants that failed to grow in the orchard were of this type. Moreover, many of those which survived were slower in resuming growth after transplanting than the standard trees. It may be of interest to mention that Tied-up Buds (Fuertes) planted by the senior author in Los Angeles County grew more rapidly, at least during the first year, than standard trees on the same rootstocks and grown in the same nursery.

The Carpinteria nursery yielded slightly over 500 trees. They were distributed in the spring of 1948 among the following six growers: In the Goleta area: H. Goodkind, P. Stevens, C. Rich; in the Carpinteria area: T. Abbott, W. Yule, Jr., S. Shepard.

About 200 seedlings on which the buds failed or whose bud sprouts looked doubtful were turned over to C. Hardesty, the present owner of the nursery site. Those which happened to be in the right location were left intact while others were transplanted. The

seedlings, representing most of the rootstock varieties, will be allowed to fruit before they are top-worked. Since all of these seedlings are from known varieties, the outcome of this project will be watched with interest.



Fig. 2. Left: Tied up bud as planted. Right: Same a few months later.

### Tip-Grafts

As is generally known, the "tip graft" method advocated by Walter Beck\* has attracted considerable attention. It consists of veneer-grafting a one-bud scion onto a young potted seedling.



Fig. 3. Left: Tip grafts as planted. Right: Same a few months later.

In order to test the relative merits of tip-grafts and standard trees, tip grafts were propagated on several of the rootstock varieties used for standard trees. Northrop, a Mexican; and Waldin, a West Indian variety not previously included, were added. The tip grafts were planted out in July 1948. Fifty of them were planted in Gordon Troup's orchard at Goleta. Another forty, mostly smaller ones, were set out in a nursery close by. The present plan is to plant these nursery trees in the orchard next spring and compare them with those planted directly in the orchard.

Some 50 tip grafts were also planted in C. Rich's orchard for comparison with the standard trees transplanted from the Carpinteria nursery. This plot also contains a considerable number of tied-up buds, hence should furnish some data as to comparative behavior of standard, tied-up buds and tip grafts.

### **Previous Planting**

The only previous planting in Santa Barbara County was made in the Bradbury orchard, Carpinteria, in November 1946. These trees, all Newman Fuertes, were grown in the U.C.L.A. nursery. The plot consists of 76 trees and includes 7 Guatemalan and 4 Mexican rootstock varieties and 2 trees on their own roots. A few tip grafts were added in 1948.

In summary the total number of MacArthur trees planted in Santa Barbara County in 1948, including tip grafts, is a little over 600. Of these about 330 are on 14 Guatemalan rootstock varieties, 270 on 6 Mexican varieties and 14 on Waldin, which is a West Indian variety.

### **Summary**

Nine avocado rootstock plots have been established in Santa Barbara County. One of them, planted in 1946, consists of 76 Fuerte trees on 11 rootstock varieties.

Seven plots, totaling about 560 MacArthur trees on 21 rootstock varieties, were planted in 1948. The ninth plot consists of about 200 unbudded seedlings, representing 17 varieties, which will be allowed to fruit before they are top-worked.

**TABLE I**  
**Summary of seeds and seedlings planted and budlings obtained,**  
**as of April 16, 1948**

Rootstock Varieties	No. Seeds Planted	% Usable Seedlings	% of Budlings Obtained on Basis of:			
			Seeds Planted		Seedlings Planted	
			Usable	Doubtful* Included	Usable	Doubtful Included
<b>Guatemalan</b>						
Anaheim	127	82	65		79	
Cabnal	56	52	32		62	
Carlsbad	11	90	73		80	
Challenge	10	80	50		63	
Dickinson	130	53	34	36	64	68
Hass	53	55	26	34	48	62
Itzamna	110	38	21	22	55	57
Lyon	4	50	25		50	
MacArthur	36	75	50	53	64	68
Mayapan	49	24	18		75	
Nabal	135	66	46	49	70	74
Sharpless	42	67	52		79	
Spinks	6	70	50	67	75	100
Taft	55	64	13	18	20	29
Total	824					
<b>Mexican</b>						
Blake	102	27	5	7	7	25
Duke	85	92	53	62	58	68
Ganter	98	86	64	66	75	77
Mexicola	180	59	24	41	32	53
Topa Topa	160	88	39	51	44	58
Total	625					
Grand Total	1449					

\*By "Doubtful Budlings" is meant that the MacArthur buds were either still dormant or that bud growth was arrested for some unknown reason.

\*Beck, Walter E. Quick Propagation of Avocado Nursery. Yearbook, Calif. Avocado Society 1947.