

Effect of the Removal of the Seed Coats on Avocado Seed Germination

E. R. EGGERS

University of California, Los Angeles

When starting to plant avocado seeds of Mexican varieties for an avocado rootstock project, it was noted that with some varieties the seed coats come off readily and had come off many seeds in the ordinary process of collection and storage, whereas with other varieties, particularly Mexicola, the seed coats were found to adhere very tenaciously.

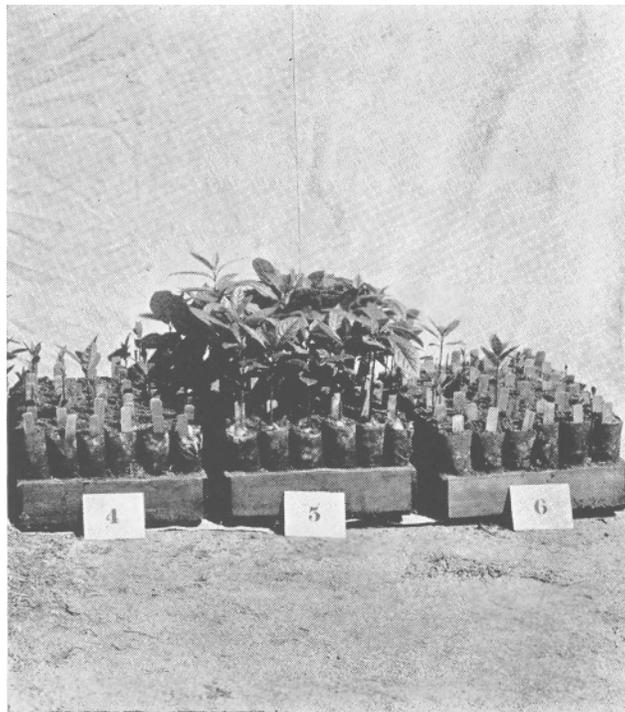


Fig. 1. Mexicola seedlings four months after planting. Lots 4 and 6 with seed coats. Lot 5. Seed coats removed.

In order to determine whether the presence or absence of the seed coats is a factor in germination, seed coats were removed from one lot of the Mexicola seeds prior to planting.

The seeds were planted on November 9, 1939, in bottomless tar paper pots two inches in diameter and six inches deep. The pots were set in place in flats and partially filled with a prepared sandy loam mixture. The seeds were set in the pots base down with the apex slightly below or at the level of the top of the pot. Soil was then filled in around the

seeds, leaving the apex of the seed uncovered. Peat moss was then lightly spread over all flats of seeds to help hold the moisture. Subsequent treatment was the same for all lots of seed.

TABLE 1

Rootstock Variety	Seed Coats —Removed +Not Removed	Per Cent Germinated	Seedlings Ave. Height Centimeters	40 Seed Lot Ave. Height Centimeters
Blake	—	95.0	16.7	15.8
	+	50.0	14.6	7.3
Ganter	—	92.5	12.0	11.2
	+	44.8	8.8	4.0
Northrup	—	85.0	14.4	12.2
	+	32.5	14.1	4.6
Topa T, a	—	72.5	14.3	10.4
	+	40.0	15.8	6.3
Mexicola	—	57.7	10.3	5.9
	+	5.0	9.5	0.5
Leucadia	—	82.5	21.5	17.7
	+	37.5	13.3	5.0

When germination started, it was noted that only the seeds with seed coats removed were growing. Seeds with seed coats on were four to six weeks later in starting and germinated less uniformly. The difference in stage of development may be noted in a photograph made March 12, 1940, approximately four months after the date of planting. Figure 1.

In order to check the 1939-40 observations, the same planting procedure was followed in 1940 with the exception that the tips of the seeds were not covered with peat moss. Also the trial was expanded to include seeds of the Blake, Ganter, Northrup, Topa Topa and Leucadia varieties in addition to the Mexicola.

The seeds were planted December 12, 1940, and the height of the seedlings in centimeters was measured on May 19, 1941 approximately five months after the date of planting. The results of these measurements are assembled in Table 1.

In comparing the average height of the seedlings in Table 1 two bases were employed. The first shows the average height of the measurable seedlings. The second shows the average height for the entire lot of 40 seeds. The data shows that the lots of seed from which the seed coats had been removed germinated more rapidly than those lots with seed coats attached. Germination was slower in all the lots as compared to the 1939 plantings for two probable reasons; one, the seed flats were set on the floor of the glass-house instead of on benches and as a result were held at lower temperatures; two, the tips of the seeds were not covered with peat moss and as a result were not kept as moist. The latter factor is particularly noticeable in the lots of Mexicola seeds. These seeds are smaller and more rotund than seeds of the remaining varieties in this group. Omitting the peat moss cover left a greater proportion of each Mexicola seed uncovered and subject to drying as compared to the larger and longer seeds of the remaining varieties, resulting in slower germination. Seeds in most of the twelve lots

continued germinating after the date of measurement.

Also it was noted that occasional seedlings in the lots of unpeeled seed were almost as large as the largest seedlings in the peeled lots. This may be due to the partial cracking and sloughing off of the seed coats before or during the process of planting.

As a final cross check on the effect of removal of the seed coats the procedure followed in 1939 was repeated in the 1941 plantings of Mexican avocado seeds. The Mexicola and Topa Topa seeds planted on December 4, 1941, showed, on March 26, 1942, 95 per cent and 75 per cent germination respectively for the peeled and 10 per cent each for the unpeeled seeds.

In addition to seeds planted in the glasshouse, peeled and unpeeled seeds were planted in alternate rows in an open bed in the field. Observations made in May showed the seedlings in the rows of peeled seeds to be taller and more uniform in germination as compared to the rows of unpeeled seeds.

CONCLUSIONS

From the above trials, 1939 to 1941, inclusive, it is evident that removing the seed coats from avocado seeds prior to planting hastened germination from four to six weeks and also promoted uniformity in size and stand.