

GERMINATION EXPERIMENT WITH AVOCADO SEEDS

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There is some disagreement among nurserymen as to the best method of pre-treating avocado seeds to obtain more rapid, and higher total, germination. Some nurserymen claim that the best way is to sow the seeds without any pre-treatment; others think some treatment is necessary, but do not agree on whether to remove the seed coat or to cut off the tip or bottom of the seeds. In practice, various nurserymen are using different methods.

In order to find out which treatment gives the greatest rate and highest percentage of germination, an experiment was carried out with four different seed treatments including control.

About a week before the beginning of the experiment, avocado fruits were collected from a single Mexican seedling tree. The fruits were fairly large and uniform in size (with an average of about 350 grams per fruit). Two days before the experiment was started the seeds were removed from the fruits and placed in a cool storage. A day later they were divided into four uniform groups and the following treatments carried out:

Group 1—2 cm cut off the seed tip, 0.5 cm cut off the seed bottom.

Group 2—2 cm cut off the seed tip.

Group 3—seed coat removed.

Group 4—Control.

A day later all seeds were sown in a medium-textured soil bed in four rows, 20 cm apart, 5 cm between the seeds in the row, about 5 cm deep. The seed bed was then covered with sawdust and immediately irrigated; thereafter irrigation was applied every 3-4 days, so as to keep the bed adequately moist.

The four treatment groups each consisted of 90 seeds, from six replications with 15 seeds each.

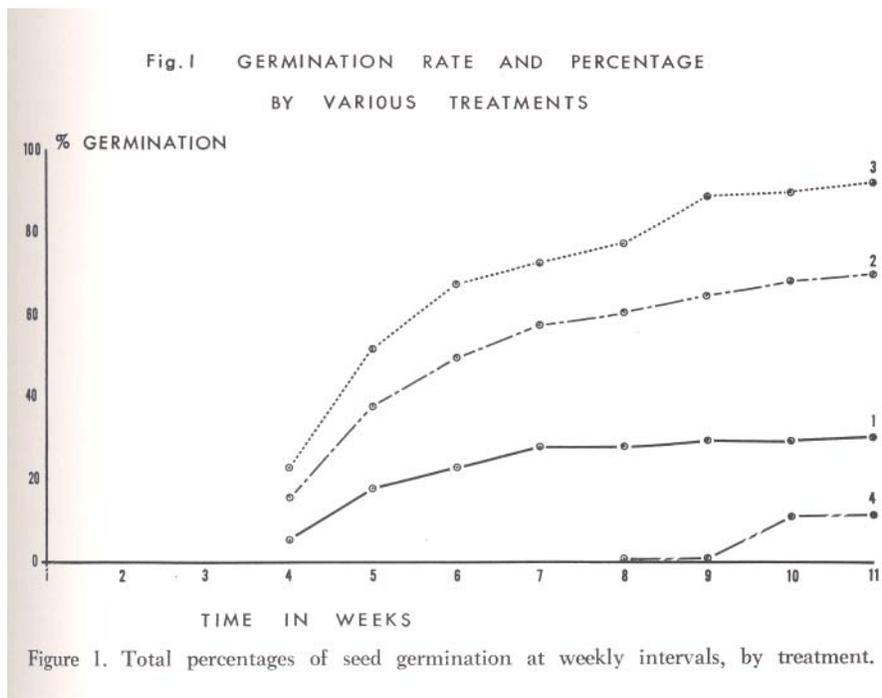
The experiment lasted for three months. Observations were made one month after the seeds were sown and every 5 to 10 days or so thereafter. In these observations records were taken of the number of seeds that had germinated in each treatment group.

The results given in Table 1 show the total number of seeds germinated and the percentage germination at each date, for the various treatments. Figure 1 describes graphically the respective percentages of germination in relation to time.

TABLE 1. Number and percentages of germinated seeds at each date, by treatments.

Date of counting*	Treatment 1		Treatment 2		Treatment 3		Treatment 4	
	total	%	total	%	total	%	Total	%
Oct. 28	4	4.4	14	15.5	20	22.2	0	0
Nov. 4	16	17.7	34	37.5	48	53.3	0	0
Nov. 10	21	23.3	45	50.0	61	67.7	0	0
Nov. 15	24	26.6	52	57.7	66	73.3	0	0
Nov. 20	24	26.6	55	61.1	70	77.7	1	1.1
Nov. 30	26	28.8	59	65.5	80	88.8	1	1.1
Dec. 19	26	28.8	62	68.8	81	90.0	10	11.1
Dec. 29	27	30.0	63	70.0	83	92.2	11	12.2

*The seeds were sown on September 29.



Conclusions. Statistical analysis of the results in Table 1 showed that treatment 3, removal of the seed coat, was highly significantly superior to all other treatments, both in germination rate and total percentage. Results from treatment 2 also exceeded very significantly those of treatments 1 and 4.

From previous experiments carried out in our laboratory, it seems that the avocado seed coat forms a mechanical barrier for water absorption into the seed and so slows down the germination process. In order to achieve a quick and uniform germination it is necessary, then, to remove this barrier. The question arises whether it is necessary to

remove the seed coat completely, which sometimes involves extra work, or only part of it by cutting the tip of the seed. The results of this experiment show that the larger the seed surface area exposed to moisture the faster is the germination. The poor results of treatment 1, namely, cutting of seed tip and bottom, are probably due to the penetration of various decay organisms into the embryo, which is located within the lower third of the seed. Removing the seed bottom makes it easier for such organisms to penetrate and kill the embryo.