

AVOCADO SEED TREATMENT AND STORAGE TRIAL

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Avocado production is an alternate year cycle with high yield one year followed by a year of lower production. Consequently, avocado nurserymen have an extremely variable supply of seed. Trials were initiated in 1972 to determine if seed could be held for at least one year in order to alleviate the problem of the low yield cycle years. Chemical treatments were also evaluated for control of fungi such as *Penicillium*, *Trichoderma*, *Aspergillus*, etc.

Storage Trial—1972

Three hundred and sixty avocado seed each of Henry Select, Topa Topa, and Yama were obtained through the courtesy of three avocado nurserymen. Avocado fruit were obtained during the week of December 21, 1971, allowed to ripen and then the seed removed from the fruit, cleaned and allowed to dry. Each variety was divided into equal lots of 120 seed. These were further divided into lots of 10 seeds each and replicated three times for the chemical treatments. Dust fungicide treatments were applied on January 13 for Topa Topa and Henry Select and on January 18 for the Yama variety. All chemical treatments were applied as 5% fungicidal dusts, with complete coverage of the seed surface. Five per cent chlordane dust was also applied to the Topa Topa and Henry Select treatments. Topa Topa treatments were Benlate+ Botran; or Daconil 2787; or Benlate; or no treatment. The seeds were then stored in either 1) closed 1.5 mm polyethylene bag, 2) 1.5 mm polyethylene bag with 5/16 inch holes throughout the bag, or 3) stored in wood shavings.

The Yama seeds were cleaned, dried as with the Topa Topa and treated with Benlate, or Benlate+ Botran, or Captan, or no treatment. They were then placed in lots of 10 each in either 1) closed 1.5 mm polyethylene bag; 2) 1.5 mm polyethylene with 1/8 inch holes throughout the bag; or 3) or stored in wood shavings.

The Henry Select seeds were cleaned, dried and treated with Difolatan, or Benlate or Arasan (thiram) or no treatment. They were then placed in lots of 10 each in either 1) 1.5 mm polyethylene bag with 1/8 inch holes throughout the bag; 2) peat moss and perlite; or 3) wood shavings.

All avocado seed were then placed for storage in a 48°F refrigerated cold box located at the University of California, Riverside. Humidity was not added during the storage period.

Results

Avocado seed were removed from the storage chamber on January 16, 1973 and evaluated for firmness, lack of disease organisms and general, overall appearance. The best results with either Topa Topa or Yama varieties were where the seed were stored in closed 1.5 mm polyethylene bags. Storage in either 1.5 mm polyethylene bags with 5/16 inch holes or 1/8 inch holes or in wood shavings gave unsatisfactory results. Many seeds were invaded by fungi such as *Penicillium* and *Aspergillus*. While Benlate, Benlate + Botran or Captan appeared to have some merit for improvement of the condition of the seeds the more important factor was the storage in the closed, plastic bag. Daconil 2787 did not give satisfactory control of the fungi on the seed surface.

The Henry Select variety did not keep well in storage with any physical or chemical treatment. It is suggested the main reason might have been that seeds were immature at the time of picking.

Selected seeds were taken from the Topa Topa and Yama variety trials and were planted for germination and growth tests in the UCR Plant Pathology greenhouse. Again, the closed bag storage treatment produced the best germination and plants. Those stored in bags with holes or wood shavings provided unsatisfactory results.

Storage Trial—1973-1974

Three hundred Topa Topa avocado fruit were picked from trees at the UCR Plant Pathology grove on October 5, 1973. Fruit was allowed to ripen, seeds removed, cleaned and allowed to dry. All seed, except a check "treatment, received a hot water treatment at 120°F for 30 minutes these seeds were cooled immediately in clean, cold running water. The seeds were then placed in fungicidal dips for 1 minute, removed, dried and placed in closed, polyethylene bags or in polyethylene bags with 14 inch holes throughout. Fungicide treatments were either Benlate 50W, 8 oz.; or thiram 65W, 1 lb; or captan 75W, 1 lb.; or no treatment. Rates of fungicides are per 8 gallons of water. The ninth treatment consisted of hot water, dipped in thiram 65W, 1 lb., and placed in closed polyethylene bag thoroughly wet. The tenth treatment was simply placing the avocado seed in a closed polyethylene bag without any chemical or hot water treatment. Seed were stored in 48°F refrigerated cold storage at the University of California, Riverside, on October 22, 1973.

Results

Avocado seed treatments were taken out of cold storage October 7, 1974 and evaluated for overall appearance and control of disease organisms. As in the previous trial, seed placed in closed polyethylene bags provided the best appearance and disease control. Seed stored in closed, polyethylene bag without any hot water treatment or fungicide application had the brightest color and was disease free at the end of the experiment. *Aspergillus* and *Penicillium* were present on many of the seeds stored in polyethylene bags with holes and appearance was not of first quality.

The results of these two trials indicate avocado nurserymen should select high quality

mature fruit for use as seed sources. Seed should be cleaned and dried before placing in storage. The best results were obtained with seed placed in closed 1.5 mm polyethylene bags. Results indicate hot water seed treatment should be just before planting material in the nursery and not before the storage period. Based on our results the use of a fungicide is of questionable value. Fungicides having some merit include Benlate, Botran, thiram, or captan.