

SOUTH COAST FIELD STATION — AN IMPORTANT AVOCADO RESEARCH FACILITY

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The University of California South Coast Field Station was established as a subtropical horticulture station in 1956 in response to the need of the Agricultural Experiment Station to test crops in the coastal and intermediate areas of southern California. The Station is located in the southern portion of Orange County, ten miles southeast of Santa Ana; and it provides approximately 200 acres of testing ground under climatic conditions similar to those that prevail in the coastal and intermediate regions of California from approximately San Luis Obispo County to the Mexican border.

The Station came into being after a decade of deliberation with strong support from the California Avocado Society. They urged that a research facility be established where consistently high yielding and disease resistant avocado varieties could be developed. Such research work is now under way on approximately 38 acres of the Station.

In 1956 an article appeared in the California Avocado Society's yearbook outlining the progress of construction of the South Coast Field Station. The author wrote that soon there will be land allocated for avocado research in the areas of breeding, irrigation, virus and fungus diseases, rootstocks, varieties and pests. Today after 11 years, many of these long-range experimental plantings are beginning to yield practical as well as basic information that will be of great benefit to the California avocado industry.

Avocado research by nature is an extremely long-range venture. This fact is emphasized by the avocado breeding work being carried on at the Station. The development of superior varieties cannot be done overnight. Dr. B. O. Berg, avocado breeding project leader, points out that to develop varieties with the qualities needed in today's avocado industry takes a tremendous amount of patience and a great deal of time.

The introduction of improved varieties would probably permit a considerable expansion of avocado production in California. In periods of heavy supply, established markets are faced with an overabundance of avocado fruit which force prices down. In periods of short supply, these markets are barely able to secure enough fruit to satisfy the existing demand. Ideally, one of the qualities of an improved variety would be to smooth out the production picture, which would ultimately result in the orderly expansion of markets throughout the United States.

Development of avocado varieties to meet this challenge is but one of the goals of breeding work at South Coast Field Station. Literally thousands of seedlings resulting from known parents are being screened and tested in an effort to discover progeny with characteristics ranging from superior eating quality to pollination habit.

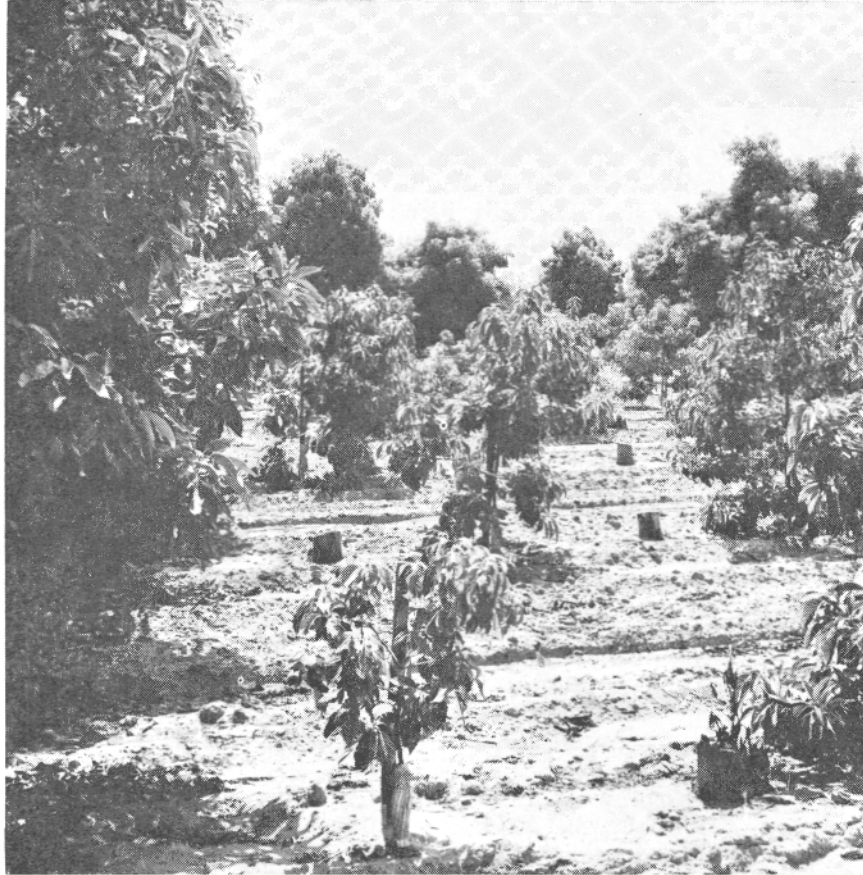


Figure 1—Avocado breeding block at South Coast Field Station. Stumps are all that is left of selections dropped from the breeding program. Newly planted trees are progeny added to program. These trees will be tested as soon as they fruit.

Selection for these and other traits will continue for many years to come. Those progeny selected will, of course, require extensive testing in different environmental locations and in different years before any of them can seriously be considered for naming as new varieties.

Avocado root rot, probably the greatest threat to existing avocado acreage in California, is also being studied intensively at South Coast Field Station. Under the direction of Dr. G. A. Zentmyer, avocado root rot project leader, a large collection of *Persea americana* and related species from Latin America have been collected and are being grown at the Station. A number of Duke cuttings are also included in this planting. These selections have been established at South Coast Field Station because they are of particular interest in the *Phytophthora* root rot resistance program.

Fruit, seeds and scion material from this collection are being used in laboratory and greenhouse experiments in Riverside and will eventually be used in field plantings in various areas in southern California.

Phytophthora cinnamomi is not present on the Station, and actual tests with the organism are carried on at Riverside and other locations throughout the state.

When the Station was opened in 1956, a 7.1 acre Bacon avocado planting propagated on Clonal and seedling rootstocks was established by the Soils and Plant Nutrition Department under the direction of Dr. S. J. Richards. While this planting was reaching a stage of maturity necessary for the initiation of a detailed irrigation and fertility study, information on a number of other tree responses was gathered. The influence of rootstock on yield, pruning as it affects yields, and a time-and-motion study relating to the cost of picking tall, upright varieties are just some of the factors evaluated in this project. The irrigation and fertility variables, for which the planting was established, were initiated in 1967; and it is expected that this long-term experiment will greatly aid the industry's knowledge on avocado fertilization and irrigation.



Figure 2—Experimental Bacon avocado orchard being used for irrigation and fertilization studies.

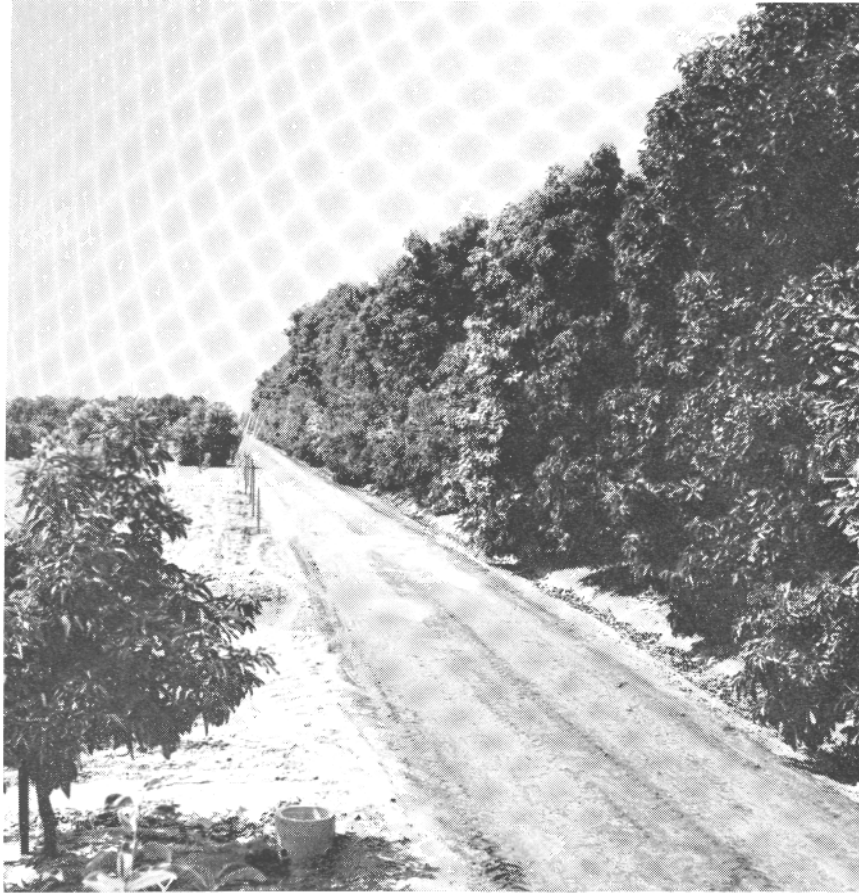


Figure 3—Seedling windbreak resulting from known parents. Trees are being used in breeding program while protecting other crops at South Coast Field Station from wind damage.

In addition to specific research projects, the scientists involved in avocado research at South Coast Field Station are collecting information on growing conditions and a number of avocado responses peculiar to most of California's avocado growing area. Experience has shown that avocado orchard problems often appear with unexpected urgency. To solve them quickly and effectively requires a vast amount of knowledge gathered in long painstaking and mostly unspectacular research, typical to that being conducted at the South Coast Field Station.