

California

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New Program of Research On Olive Cultural Problems

H. T. Hartmann

One problem which has plagued olive growers since antiquity is the irregular bearing nature of olive trees.

Well cared for trees in apparently perfect condition often have a heavy bloom in the spring, but most or all the flowers drop soon after opening. This has been determined to be due to abortion of the pistil—female part of the flower—which occurs before the flowers open. To overcome this, various fertilizer treatments are being tried.

Spray applications of some of the new synthetic "hormones" are also being tested for their value in preventing this pistil abortion.

Flower-bud Formation

A study of the time of flower-bud formation in the olive has already revealed that it occurs about the middle of March. There seems to be little difference between varieties or between the various olive sections as to the time of flower-bud formation.

The time of occurrence of this phenomenon in the olive is in marked contrast to deciduous fruits in which it generally takes place during the summer or fall preceding the blooming period.

Rootstock Investigations

An investigation dealing with the response of olive varieties when grown on various rootstocks is being undertaken.

Five acres of land at the Wolfskill Experimental Orchard at Winters will be used for this study. Trees will be grown on a number of *Olea* species gathered from their native habitat all over the world.

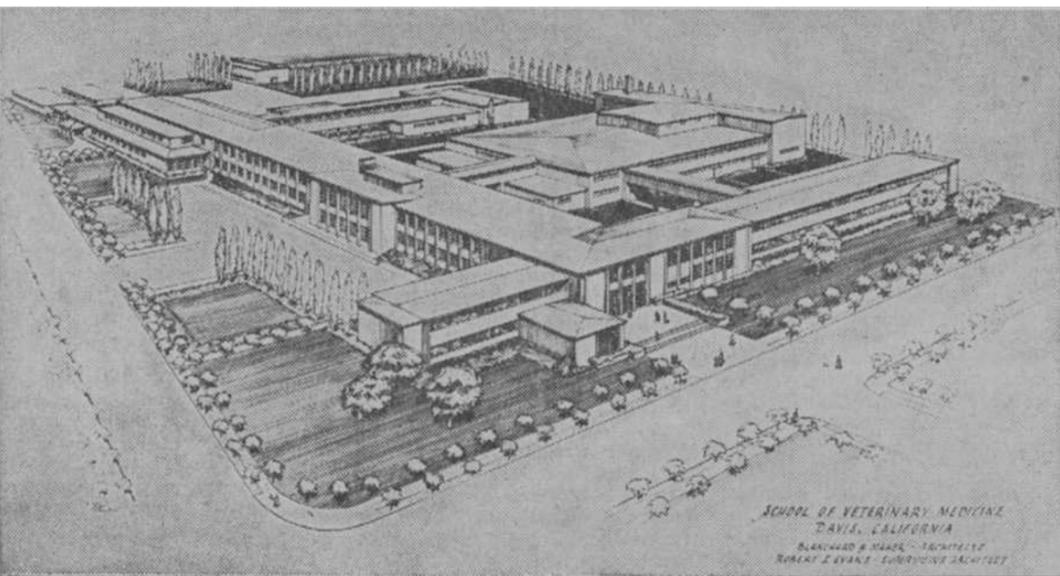
Vigorous varieties used as rootstocks in some of the Mediterranean countries will also be tried as well as the rootstocks now being used in California.

Collection of Varieties Under Study

A collection of olive varieties is being established at the Wolfskill Experimental Orchard. About fifty varieties are now growing there, most of these being secured from the United States Department of Agriculture Plant Introduction Garden at Chico.

In addition varieties which have never been grown in this country are being imported from the Mediterranean region. Scions of several (Continued on page 4)

New University of California School of Veterinary Medicine On Davis Campus of College of Agriculture



The new School of Veterinary Medicine to be established by the University of California will be housed in a specially designed group of buildings on the Davis campus of the College of Agriculture, as shown in the above architect's drawing.

Professional training will be offered in the form of a four-year curriculum—in addition to the two-year pre-professional course—and the degree of Doctor of Veterinary Medicine will be conferred. Classes will be

limited in number to the facilities available, probably in the neighborhood of 40 students per class.

The buildings will have facilities for research and for teaching. The main structure will provide 153,700 square feet of floor space, the infected animals building 68,500, the kennels 5,000, and the hospital barn, 10,000.

The earliest possible date when the facilities for the professional school might be ready would be September 1948, with a later date, a possibility.

Over 1100 Recognized Soil Types Represented in Twelve Regions Of State's 100,000,000 Acres

R. Earl Storie

To date in California 380 different soil series have been established, with over 1100 recognized soil types. In order to condense and make more understandable soils of the state, twelve soil regions have been set up. Within each one of these general regions a certain zonal soil condition exists, modified to a considerable extent by local variations in parent material, topography, and drainage.

The important agricultural lands of California are composed of the azonal or alluvial soils. Of the total 100,000,000 acres in the state about 11,000,000 acres are classed as crop-

land with about 5,000,000 acres being irrigated.

I—Northwestern Coast Ranges

This part of California comprises about 10.4 per cent of the state.

The dominant upland or zonal soil is illustrated by Hugo loam, with its gray-brown podzolic characteristics.

The alluvial soils of the valleys, azonal in character, are well illustrated by Soquel loam which is very productive. Chemically, these soils are of acid reaction and usually low in available phosphorus.

II—Central and Northern Coast

This region, about two per cent of the state, takes in an area immediately bordering the coast composed of coastal terrace lands bordered on the east by uplands.

The upland soils have prairie-like characteristics of dark color and slightly acid reaction, as illustrated by Cayucos clay. Extensive areas of intrazonal soils of planosol character such as exhibited in the Watsonville loam occur on the coastal plain.

III—Sierra Nevada, Trinity, Cascade and Sierras of Southern California

The Sierras of California, 21.4 per cent of the state, consist of rugged mountainous topography occurring at elevations of 1,000 to 14,000 feet above sea level.

This region is of predominately igneous parent material. The soils are residual in character, of acid reaction, with the underlying bedrock generally occurring at a depth of two to five feet from the surface.

The two dominant soil types are Aiken clay loam and Holland sandy loam. Both are of podzolic character with Aiken clay loam being derived from lateritic material (basic igneous rocks). Holland sandy loam is derived from granitic rocks. Chemically these soils are of acid

reaction and low in available phosphorus.

IV—Sacramento Valley

The Sacramento Valley comprises about four per cent of the state.

Many of the soils on the east side are derived from igneous alluvium; those in the trough from alluvium of mixed origin, and those on the west side from sedimentary rock alluvium.

Over 80 different soil series have been mapped in the Sacramento Valley. Three have been picked as representing certain conditions or (Continued on page 2)

Improved Forage Grasses To Be Put To Field Trials

G. L. Stebbins, Jr.

More than fifty new strains of forage grasses have been produced during the past five years by hybridizing valuable existing species. At least twenty of the new strains are potential new species.

The creation of these fifty odd new strains resulted from studies indicated by a survey made of the principal perennial grass species of California with reference to their cell structure, functions, multiplication, and life history.

Survey Findings

There is a predominance of winter growing annual plants in the forage areas of the state, and a scarcity of palatable perennial grasses or other plants which are active during the summer months.

There is a limited number of perennial grass species native to California and all of them have certain drawbacks. Various perennial forage plants have been introduced from other countries but they have not succeeded on a large scale.

The results of the cytological survey—the study of the plant cells—showed that the species most resistant to heat and drought have high chromosome numbers as compared with other members of the same plant family. The evidence suggested that these species had originated in past geological ages through hybridization between previously existing species, followed by doubling of the chromosome number.

Hybridization Experiments

The suggestion that natural hybridization had originated the currently known species was strengthened by the results of hybridization experiments with certain species of brome grass.

The hybrids produced by these experiments were vigorous. Later work has shown that they can be made partly, or fully, fertile by doubling their chromosome number with the aid of colchicine, a chemical which affects the cell division in the growing plants.

Observations in the field have shown that vigorous hybrids often are formed by natural cross-pollination between different species. Such hybrids are completely sterile, but some of them may be rendered fertile (Continued on page 4)

Further Improvements Needed Before Mechanization of Cotton Growing Reaches Full Efficiency

J. P. Fairbank

The mechanical cotton picker is the center piece of cotton mechanization, the hoped for answer to the current labor cost of 100 hours per acre for hand picking.

The cotton picker is not a new machine. One was patented way back in 1850. The Division of Agricultural Engineering made studies of cotton pickers in 1928-30. The present machines are larger, better built, pick more cotton and cost more, but the differences are not revolutionary.

Two Types

Cotton pickers are of either the stripper or the picker types.

The stripper is a simple machine which strips off the entire boll together with some of the plant. The lint is extracted at the gin.

The picker plucks the locks of seed cotton directly from the burrs which remain on the plant, as is done by hand. A multitude of revolving spin-

dles traverse the cotton plants and when one of them touches an open boll, the fiber wraps around the spindle.

As the spindle retracts into a housing, the cotton is doffed into an air stream, thence into a hopper or a trailer.

The path followed by the spindles is such that the cotton plants are not raked or combed, thus injury to unopened bolls is avoided and the field can be picked again after the late bolls mature.

Operation

One manufacturer's picker runs at three miles an hour, closely. Another picker operates at two miles an hour in low gear, which, in 40-inch rows figures eight-tenths-acre per hour.

The time lost in turning, dumping and servicing, reduces the average (Continued on page 2)

Spring Management of Honeybee Colonies Determined By Colony Needs Rather Than By Calendar

J. E. Eckert

The condition of a honeybee colony during Springtime points to its probable usefulness in the next six or eight weeks.

The term "spring management" denotes the attention given to colonies during the period of their early activity following a quiescent period of winter. It is not a definite period in the calendar year.

Spring Requirements

The amount of spring manipulations can be reduced to a minimum if each colony is provided with certain essentials the preceding fall.

A colony that has a young queen, seven or more frames of bees, and sufficient stores of honey and pollen to supply the bees until they can secure surplus stores in the spring, will need little attention until they require additional room for the expansion of their brood nest and storage area.

The queen is the most important determining factor. A young queen

can be provided in the fall and if sufficient natural honey is not available, additional food can be added in the form of a heavy sugar syrup. Besides honey, bees require pollen to enable the colony to develop normally in the spring and this must be in the combs in the fall to provide for early brood rearing.

Colonies Wintered in 1 or 2-Story Hives

Some beekeepers winter their colonies in one-story hives, but a majority leave two hive bodies with the bees. If the one-story method is used, the combs must be filled with at least 30 pounds of honey plus sufficient pollen to fill two combs in order to insure sufficient food for the colony from November through February in most parts of California.

Usually by the first of March, a normal colony has brood in several frames and is occupying the greater portion of a two-story hive. Col- (Continued on page 2)