

California

AGRICULTURE

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New Strains Of Wheat Bred By Agronomists At Davis Increase Yields Nearly 25 Per Cent

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The average in wheat yield today in California is almost 25 per cent greater than it was during the four decades prior to the beginning of wheat research work done by the College of Agriculture, in 1904, and practically the entire wheat acreage in the state is planted to varieties which were bred and improved by the Division of Agronomy.

In 1889 California ranked second as a wheat producing state, with a production of over 40 million bushels from 2 1/2 million acres. Shortly thereafter the area devoted to wheat declined rapidly, giving way to barley in the drier areas and to irrigated crops such as alfalfa, fruits, and vines. The wheat acreage seems to have stabilized around 3/4 of a million acres.

In 1904 the State Legislature appropriated \$10,000 for wheat investigations, and it was at that time that the Division of Agronomy in cooperation with the United States Department of Agriculture began their experiments on wheat improvement.

Prior to 1909 the 10-year average acre yield held pretty steady around 13 to 14 bushels with a tendency toward a slight decrease. In the 1910-1919 period a marked increase in yield occurred which was due largely to better summer fallow practice, other improved cultural practices, better seed, and the more complete control of smut.

Beginning in the late 'teens and continuing into the early 'twenties a formerly dominant varieties were largely replaced by Baart, Bunyip (introduced by the Sperry Flour Company), White Federation, and Onas, which were introduced from Australia; and by Poso, Ramona, and Escondido, all bred by this University. The increase in yield from 1920-1939 is attributed almost entirely to the superiority of the new varieties over the old ones.

That percentage of the increase credited to improved varieties is almost exactly the same as their relative yielding capacity as determined

in comparative yield trials at Davis. The backcross method of breeding, which was pioneered in the University's wheat breeding work, makes possible a technique which permits a detailed description of a new variety to be bred.

Bunt Resistance

Starting in 1919 and in cooperation with the Oregon and Washington agricultural experiment stations, all known varieties—about 950—were tested for resistance to bunt or stinking smut. Only a few proved to be resistant, two of which were highly resistant.

One of these, Martin, was found to have a single genetic factor for resistance which made it a natural for breeding purposes.

It was for the purpose of putting bunt resistance into all of our important commercial varieties, of which there were a dozen at that time, that the first backcross breeding was undertaken. This project (Continued on page 4)

Situation and Outlook Topics of New Reports

Seventeen reports covering Situation and Outlook studies in sixteen specialized fields of California agriculture are scheduled for publication upon completion by their authors, members of the staff of the Giannini Foundation, College of Agriculture.

A general report, wherein the economic factors conditioning the over-all agricultural situation and their probable effects will be analyzed, is in preparation by Siegfried V. Wantrup.

Reports covering specialized fields scheduled to be published during the first quarter of 1947 are:

The Dairy Industry, by James M. Tinley.

Bartlett Pears, by Sidney S. Hoos.

Poultry and Eggs, by Edwin C. Voorhies.

The Olive Industry, by Arthur Shultis.

Apricots, by Sherwood W. Shear.

Canning Tomatoes, by Walter D. Fisher.

Turkeys, by Edwin C. Voorhies.

Other subjects to be covered in Situation and Outlook reports include almonds, avocados, land values, sheep and wool, apples, walnuts, asparagus, lemons and clingstone peaches.

University President Discusses Work Of College Of Agriculture And Its Value to the Farmers

Condensed from an address to the annual meeting of the California Farm Bureau Federation, Santa Cruz, Oct. 30, 1946.

It would be possible to tell the farmers of California just what the University's College of Agriculture has done for them, measured in dollars and cents.

That could be done, but the time and money required to obtain the figures can better be spent, we believe, in active attack upon the farmer's problems.

In 1931 the University did make such a survey of the commercial effects of the work conducted on the four agricultural campuses—Berkeley, Davis, Los Angeles, and Riverside. The survey showed that through the cooperation of the Agricultural Experiment Station and the Agricultural Extension Service more than \$28,000,000 were added to the financial returns of the farmers of California in that year; twenty millions in added production, eight millions in savings—money the farmers did not have to spend.

What a similar survey would show today we can only conjecture, but it is believed the amount would be doubled, at least.

Applied Research

For example: In one county the recent discovery of methods of control of a disease affecting potatoes, developed by the plant pathology division, meant a million dollars to the growers last year; in another county, where University bills were

lent to dairymen, the average butterfat production per cow per year has been raised from 186 to 289 pounds, amounting to a total increase of six and one-half million pounds of butterfat.

In another county, W. H. Chandler, Professor of Pomology, solved the little-leaf riddle in deciduous fruit trees, and increased production as much as 60 per cent on approximately 20,000 acres of orchard; with the development of two new Red Kidney beans, another county was able to start production of certified seed for eastern bean growers, an enterprise that this year will earn nearly a million dollars; based on recommendations of the Entomology Division, insecticides have been used by dairymen and cattlemen in another county, with increased production estimated at a quarter of a million dollars a year.

There are underway at present, or just completed, 839 research projects in the College of Agriculture. Some of these agricultural enigmas, like Pierce's disease of grapevines, and mastitis in dairy cattle, still baffle the scientists.

One form of mastitis can be and has been controlled. Research on the other form is proceeding.

Pierce's disease is not new; many years ago it ruined the vine industry of Orange County. Today, several departments of the University—viticulture, plant pathology, botany, and others—are bending every effort to see that it shall not destroy the important grape industry that has (Continued on page 2)

Seven New Dairy Industry Projects To Be Undertaken

Seven new projects in dairy industry are to be undertaken by the University of California College of Agriculture, five by the Dairy Industry Division and two by the Home Economics Department.

The fields of investigation include these: Effect on nutritive value of milk proteins in drying and in the evaporation of whole milk.

Supplementary value of milk proteins in bread made of flour of different extraction.

Nutritive and food values of cottage cheese; nutritional values of milk fat.

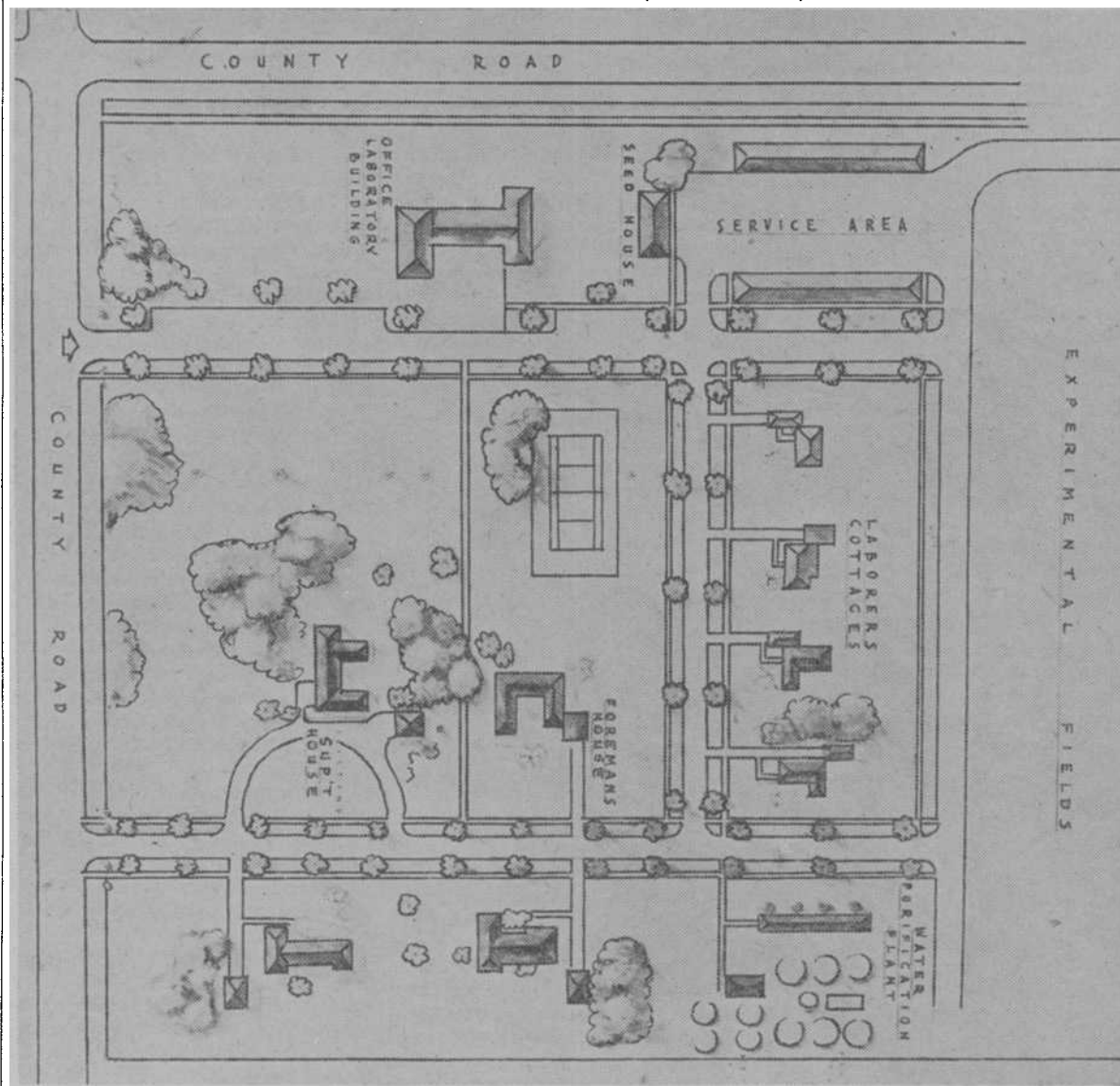
Effect of heat on milk with especial reference to flavor and discoloration of evaporated milk; investigations of ice cream.

Uses of non-fat dry milk solids.

This program is in cooperation with and under grants from the California Dairy Industry Advisory Board, and is designed to discover more information about the nutritive values of milk and its products, and new uses for milk products.

When completed, this program should yield valuable information to support and encourage continued consumption of dairy products at a high level.

COLLEGE OF AGRICULTURE FIELD STATION, MELOLAND, IMPERIAL VALLEY



ABOVE is a sketch of the proposed expansion of the Meloland Field Station of the College of Agriculture, as approved by the Regents of the University of California. Frank Hope, Jr., San Diego, has been named architect for the project.

At the left is the Laboratory-Office Building, the seed house, and the Service Area with shop and field service buildings. In the center is the existing superintendent's house, back of which is a house to

be built for the foreman, and in the rear laborers' cottages. At the right are two houses for staff members, and to the rear the expanded water purification plant.

L. G. Goar is superintendent of the Station, which previously has been doing work only in agronomy. Now however, additional work is to be opened, with N. R. Ittner in charge of livestock, and K. E. Hoffmaster in charge of truck crops.

Penicillin Is Not Suited to Control Blight of Trees

Penicillin is unsuited to the control of pear and walnut blights, according to B. A. Rudolph, in charge of the University of California Deciduous Fruit Station at San Jose.

Both of the casual parasites belong to the great group of Gram-negative bacteria that generally resist action of penicillin more stubbornly than do Gram-positive organisms. Using much larger doses of the drug required to kill Gram-positive organisms, Rudolph determined the minimum amount of penicillin necessary to kill the parasites.

Solutions of the drug in vastly greater concentration than were required to kill the organisms in laboratory tests failed to check the diseases when injected into the trees. A half-dozen possible reasons for the failure could be advanced, but Rudolph believed excessive dilution of the drug by the sap stream to be primarily responsible. The absence of a circulatory system makes rapid distribution of drugs throughout a plant impossible. Whereas drugs injected into a man's blood reach all parts of his body in comparatively few seconds, it takes several hours to inject a small amount of the same solution into a tree, during which time the unceasing flow of sap dilutes the drug to a point of ineffectiveness.