

Brucellosis Control

vaccination of dairy and beef calves proves promising in experiments

W. E. Maderious and Reuben Albaugh

The incidence of brucellosis—sometimes called Bang's disease and infectious abortion—declined from 20.64% in 1941 to 5.53% in 1947 in an experimental vaccination program with heifer calves in dairy herds in Monterey County.

In beef cattle, the same type of vaccination was practiced and the incidence of the disease dropped from 4% to 0.9%.

No other precautionary measures were used in the control work with both dairy and beef cattle.

Brucellosis affects dairy and beef cattle, swine, goats and man. The disease is caused by microorganisms known as *Brucella*.

In dairy cattle brucellosis may reduce milk production by as much as 22½% and calf crops by 40%. Abortion or premature calving is the main symptom of this disease. Infected cows often suffer from retained afterbirth, are sometimes difficult breeders, and often become sterile.

Vaccination Program

Approximately 4,000 dairy cattle and about 4,000 beef cattle were initially enrolled in this project. Each cattle owner signed an agreement with the University which could be terminated by either party at any time. During the six years of this project, no cattle owner withdrew because of dissatisfaction with the progress of the work.

To date 10,258 dairy cattle and 2,408 beef cattle have been blood tested and 5,247 dairy calves and 2,819 beef calves have been vaccinated. Of the 28 dairy herds that started in this project, 14 completed six years. Out of the eight beef herds that started, seven completed the project.

The dairies involved in this project were large, averaging over 100 cows per farm. They consisted almost entirely of Holsteins. The beef herds averaged about 200 head per herd and were entirely of the Hereford breed.

Calves vaccinated under this program were usually four to eight months of age, although older animals occasionally were vaccinated. The vaccination was conducted on the dairy herds twice a year—in March and in September. The beef cattle were vaccinated once a year, usually in October.

The initial blood test, conducted in 1941, revealed 389 of 1,884 cows tested—or 20.6%—to be positive reactors. This percentage dropped to 5.78% in 1944 and remained at nearly that same level—5.54%—in 1947.

In all cases where the collection of samples was possible, bacteriologic culture and guinea pig inoculation of milk samples from positive reacting cows were carried out. These procedures were conducted on a total of 37 cows. Of this number, only 6—or 16.2%—yielded virulent *Brucella abortus*.

It would be reasonable to expect from these tests that the incidence of brucellosis in these herds was considerably lower than 5.53%. Some of the positive agglutination tests which were observed undoubtedly were caused by the vaccination rather than disease.

A further breakdown of data from the cows found to be positive reactors in the 1947 blood test shows that about 50% of all positive reactors were not vaccinated, were purchased, or were vaccinated at maturity. The percentage of positive animals previously vaccinated in calfhood, which were running titers due to virulent infection, would seem rather low in view of the cultural results which were previously noted.

While the percentage of positive blood test reactors has been quite high in some of these herds—especially at the beginning of this program—the number of abortions from all causes never has reached a very high level in the county since the establishment of the vaccination program.

Records on average butterfat production per year on 10 herds cooperating on this project indicate that a certain increase in butterfat production was made in 1947 over 1941, the year the project was started. It is impossible to evaluate what factor in management or disease control was most responsible for this increased production but dairymen cooperating on this program are of the opinion that the control of brucellosis played a great part.

Beef Herd Tests

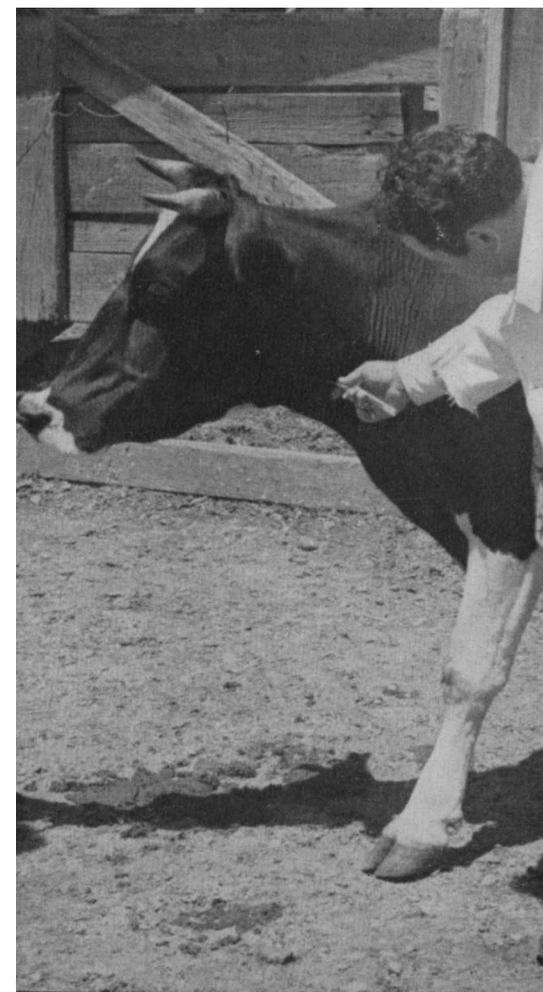
Blood tests were conducted in 1941, 1944 and 1947 to study the results of calf-

Continued on page 16



Above. Each calf is tagged to insure proper identification.

Below. Blood samples for agglutination tests are taken from each individual animal to determine presence of brucellosis.



HOMES

Continued from page 3

A neighborhood store may buy surplus fruit and vegetables. A roadside stand is an excellent outlet but most small farm home owners do not live on highways carrying heavy traffic where stands can be operated profitably.

The problem of plant varieties is important. The correct variety must be chosen for a given location.

Many fruit varieties grown in the north can not be grown successfully in most parts of southern California because of delayed foliation. The mild winters cause a delaying and irregular appearance of foliage and bloom in the spring and result in poor crop yield.

There are some types of fruits that are more economically purchased than grown. For instance, San Fernando Valley owners find apples and pears are not too well adapted to that area. Other owners are located in areas where citrus or avocados can not be grown successfully.

A study of fruit varieties best adapted for different districts and the small farm home orchard is being made.

Fig varieties are being tested in six different small farms in Los Angeles County by the University of California Experiment Station at Riverside and the Agricultural Extension Service.

Promising seedling fruit varieties found in home orchards are being watched closely for possible commercial and small farm use. Some of the best commercial fruit varieties had their origin in a home orchard.

The cutting of irrigation pipelines in subdividing orchards constitutes a difficulty in some areas.

Another big problem for the small farm home owner is pest control.

Miscellaneous or one- to two-acre specialized orchards are too small for a commercial type of spray rig and too large for a hand or back-type sprayer.

Some owners hire a local pest control organization to spray for the most difficult pests and do their own spraying for those more easily controlled.

As an assistance to the small farm home owner and as a safeguard to commercial agriculture, the University of California Agricultural Extension Service has conducted a series of field meetings in various small farm home areas.

One method of getting information to small farm home owners has been to form groups which meet from time to time under the direction of a farm advisor. Three such groups now are functioning in Los Angeles County. Demonstrations have been given in proper pruning methods, pest control practices, application of fertilizers, soil problems, and in time and labor saving practices such as the use of oil sprays to control weeds.

Further studies in management practices and cultural methods particularly adaptable to the small farm home are planned.

Richard W. Palmer is Assistant Farm Advisor, Los Angeles County.

BRUCELLOSIS

Continued from page 7

hood vaccination on the seven beef herds. Little or no infection has been present in most herds, with the exception of a herd on one ranch.

This particular herd had 15.3% positive reactors to the blood test in 1941.

This figure dropped to 9.7% in 1944, and 3.6% in 1947. Strain 19 vaccination and natural recovery from virulent infection probably are responsible jointly for this decline. The percentage of blood test reactors for all cooperating herds dropped from 4% in 1941 to 0.9% in 1947.

The above report summarizes results of a cooperative project of the University of California, College of Agriculture, Agricultural Extension Service, the Monterey County livestock inspector, and cooperating dairymen and cattlemen.

W. E. Maderious is Junior Veterinarian in the Experiment Station, Division of Veterinary Science, Berkeley.

Reuben Albaugh is Assistant Farm Advisor, Monterey County.

Dr. C. B. Outhier is Monterey County Livestock Inspector, Salinas.

REDWOOD

Continued from page 15

The comparison among the top, middle and bottom sections also is shown, the latter being definitely inferior to the others. Termites and fungi apparently had very little effect above the ground line on the middle sections. Weakness usually developed a few inches below the ground surface and on the lower section. The upper half of each specimen seemed to suffer no appreciable weakening.

L. W. Neubauer is Assistant Professor of Agricultural Engineering and Associate Agricultural Engineer, in the Experiment Station, Davis.

The above progress report is based upon Research Project No. 396-1.

NEW PUBLICATIONS



A copy of the publications listed here may be obtained without charge from the local office of the Farm Advisor or by addressing a request to Publications Office, College of Agriculture, University of California, Berkeley 4, California.

CALIFORNIA EARLY POTATOES—SITUATION AND OUTLOOK, 1948, by Ivan M. Lee, Cir. 390, November, 1948.

California's early potato industry has expanded rapidly over the past ten years. This state is far out in front of other late spring states in acreage. Farm prices have been favorable, relative to those in other states in recent years. Major fluctuations in production have been accompanied by fluctuations in farm prices in the opposite direction. If production continues at the 1948 level, farm prices here will probably fall in comparison with the price of other products which can be produced on the same land.

RIDDING THE GARDEN OF COMMON PESTS, by A. E. Michelbacher and E. O. Essig. Cir. 146, October, 1948.

Insects and related pests invade the garden from planting of seed to harvesting of crops. Many of them can be controlled easily, but the gardener must be able to identify the pests, use common sense in his cultural practices and have a basic knowledge of the insecticides and what they will do. This circular helps the gardener in all three phases of his pest control problem.

ROSE CULTURE IN CALIFORNIA, by H. M. Butterfield, Cir. 148, November, 1948.

Whether one grows roses for enjoyment, or to exhibit them, this circular answers the growers' questions. These include, "What are the popular varieties? What roses will grow in any climate? What is the best way to plant a rose bush? What insects must be controlled? How are different types of roses pruned? How are roses grown and appraised for exhibition?"

DONATIONS FOR AGRICULTURAL RESEARCH

Gifts to the University of California for research by the College of Agriculture
accepted November, 1948

BERKELEY

| | | |
|--|--------------------------------|------------------------------|
| Dr. William H. Boynton | Veterinary science research | \$255.48 |
| Buffalo Electro-Chemical Co., Inc. | 1 gallon 30% hydrogen peroxide | |
| Du Pont de Nemours—Graselli Chemical Co. | Plant nutrition studies | |
| Italian Swiss Colony | Plant pathology studies | 100 pounds Zerlate |
| The Wilson Laboratories | Leaf analysis studies | \$500.00 |
| | Plant nutrition research | 5 pounds of liver Fraction 1 |

LOS ANGELES

| | | |
|------------------|-------------------------|---------------------------------|
| H. W. Arrowsmith | Plant nutrition studies | 100 pounds of liver Fraction L. |
|------------------|-------------------------|---------------------------------|