

## THE STATUS OF BRUCELLOSIS RESEARCH AND PROGRAMS IN FLORIDA

Paul Nicoletti, D.V.M., M.S.  
Epidemiologist  
U.S.D.A.  
Gainesville, Florida

The successes in reducing the incidence of brucellosis during the fifties and sixties resulted in what could be called a scientific euphoria. Optimistic predictions were made that the disease would be eradicated by the end of 1972. The date was later amended to 1975. Research was curtailed and a mood prevailed among many program officials that what scientific knowledge was lacking did not matter.

Since the early seventies, there has been a disturbing trend in the statistics which reflect the incidence of the disease and program activities.

While most of the brucellosis in the United States is in beef cattle herds, last year there was also an increase of the infected dairy herds found.

There has been an increase in reactors and percentage of infection in Florida during the past two years.

TABLE 1: DAIRY CATTLE TESTED FOR BRUCELLOSIS IN FLORIDA

| <u>Year</u> | <u>Number Tested</u> | <u>Reactors</u> | <u>% Infection</u> |
|-------------|----------------------|-----------------|--------------------|
| 1971        | 186,351              | 3,395           | 1.8                |
| 1972        | 417,642              | 4,401           | 1.1                |
| 1973        | 593,823              | 3,325           | 0.6                |
| 1974        | 501,439              | 4,692           | 0.9                |
| 1975        | 531,823              | 5,593           | 1.1                |

Several reasons can be cited for the increasing incidence of brucellosis in the United States and in Florida. Surely two major explanations are the decreases in calf vaccinations and increased herd size.

There is a direct relationship between herd size and percentage of infected herds in Florida.

TABLE 2: RELATIONSHIP OF DAIRY HERD SIZE TO INFECTION RATES FOR BRUCELLOSIS IN FLORIDA

| <u>Herd Size</u> | <u>No. Dairies</u> | <u>No. Infected</u> | <u>%</u> |
|------------------|--------------------|---------------------|----------|
| 15 - 99          | 61                 | 3                   | 5        |
| 100 - 199        | 89                 | 9                   | 10       |
| 200 - 499        | 128                | 19                  | 15       |
| 500 - 999        | 100                | 31                  | 31       |
| 1000 - 1999      | 28                 | 19                  | 68       |
| 2000 - +         | 5                  | 4                   | 80       |

There are somewhat unique problems in Florida dairy herds. The average size exceeds 400 cows and the disease exposure potential is alarming in these populations.

Most replacement cattle in large Florida dairy herds are purchased from other states. In past years, these were usually vaccinated against brucellosis as calves. The deemphasis on vaccination in many states has resulted in a reduced supply of vaccinated replacements. This has caused a shift in the ratio of vaccinated and unvaccinated cattle in Florida herds. Owners and cattle dealers report increasing difficulty in locating vaccinated replacements.

Many factors have contributed to the problems of eliminating brucellosis in large herds through test and slaughter methods. A petition was made by representatives of the dairy industry and concerned animal health officials to reinstitute a long abandoned practice of adult cattle vaccination with strain 19. The brucellosis committee of the United States Animal Health Association authorized the USDA to initiate experimental studies in selected Florida dairy herds. These began in 1975. Several methods of vaccine administration and varying dosages are being evaluated through several serologic and bacteriologic procedures.

Five herds are now included in the project and another should be added soon. The studies can be briefly summarized:

Herd 1 - Approximately 400 cows vaccinated - 1/2 the herd with a standard (5cc) dosage of strain 19 and 1/2 the cattle given .1cc intradermally.

Herd 2 - Approximately 900 cows vaccinated with a standard dosage of strain 19.

Herd 3 - Approximately 8000 cows vaccinated at the end of lactation with a standard dosage of strain 19.

Herd 4 - Approximately 700 cows vaccinated - 1/2 the herd given a standard dosage and 1/2 given a reduced (1/20th) dosage of strain 19.

Herd 5 - Approximately 700 cows - 40% of the cattle were vaccinated with a standard dosage; 40% were inoculated in the conjuncional sac with a reduced dosage; 20% were left as unvaccinated controls.

Herd 6 - Will be inoculated with strain 19 and vaccine strain 45/20.

Blood samples are collected periodically from the cattle and examined by 5 laboratory tests. Specimens for bacteriologic studies are collected from selected cattle.

The studies are in progress and no conclusions can be made about some of the vaccination methods. Some developments are:

- 1) There has been a great reduction in the incidence of brucellosis in herds which have been vaccinated for several months.

2) Some of the special laboratory procedures are proving to be very useful in differentiating titers produced by the vaccine and from natural infection.

3) There have been few abortions following vaccination.

4) There has been a temporary loss of milk production and feed consumption following vaccination.

Studies are underway in other parts of the United States to examine other vaccines or immunogenic methods and to refine diagnostic techniques. We are cooperating with some of these research institutions.

We are hopeful that some of the accelerated research projects will provide answers to serious problems. Research rarely provides instant results and brucellosis is a difficult disease.

A few suggestions to dairymen who now have infected herds or wish to avoid the disease are:

1) If you raise replacements, vaccinate them at the proper age of 2 to 6 months. If you purchase replacements, try to select vaccinates.

2) Keep informed on the disease and research studies.

3) Practice preventive veterinary medicine and good herd health management. It is far easier to prevent diseases than to eliminate them.

# BRUCELLOSIS INFECTED HERDS FOUND

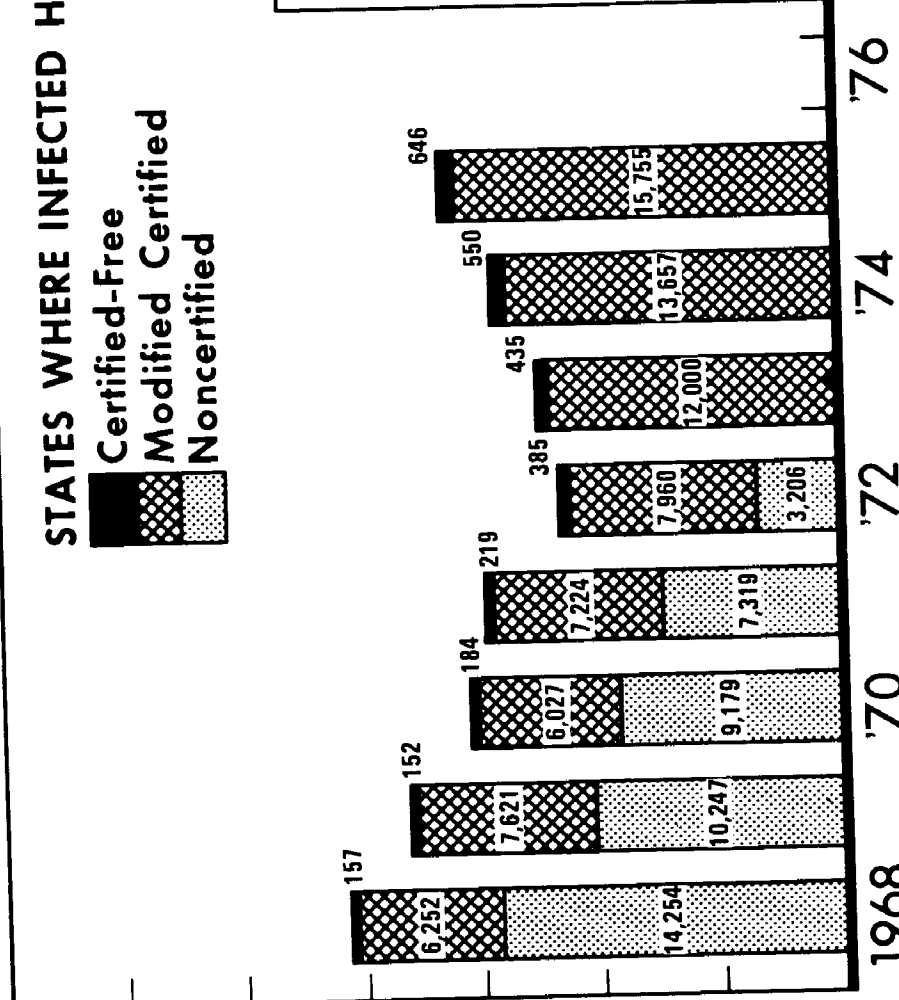
In Noncertified, Modified Certified, and Certified-Free States

NUMBER INFECTED HERDS

35,000  
30,000  
25,000  
20,000  
15,000  
10,000  
5,000  
0

STATES WHERE INFECTED HERDS FOUND

Certified-Free  
 Modified Certified  
 Noncertified



1968 '70 '72 '74 '76  
FISCAL YEAR

| FISCAL YEAR | NUMBER STATES |                    |                |
|-------------|---------------|--------------------|----------------|
|             | Non-Certified | Modified Certified | Certified Free |
| 1968        | 8             | 29                 | 13             |
| 1969        | 6             | 29                 | 15             |
| 1970        | 4             | 27                 | 19             |
| 1971        | 1             | 27                 | 22             |
| 1972        | 1             | 22                 | 27             |
| 1973        | 0             | 20                 | 30             |
| 1974        | 0             | 20                 | 30             |
| 1975        | 0             | 21                 | 29             |
| 1976        |               |                    |                |

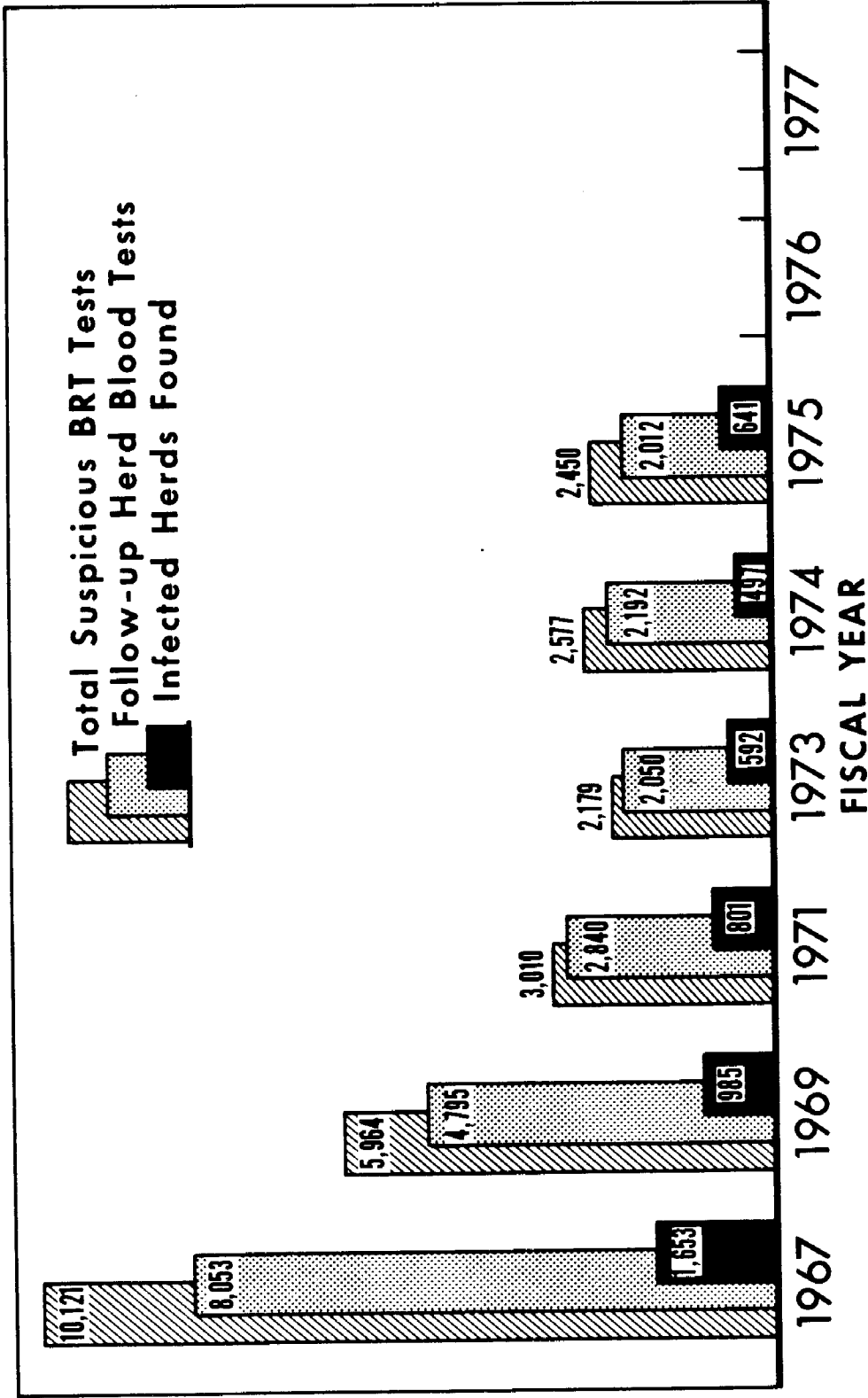
U.S. DEPARTMENT OF AGRICULTURE

VETERINARY SERVICES

ANIMAL AND PLANT HEALTH INSPECTION SERVICE

Brucellosis Eradication

# MILK RING TEST RESULTS (BRT)



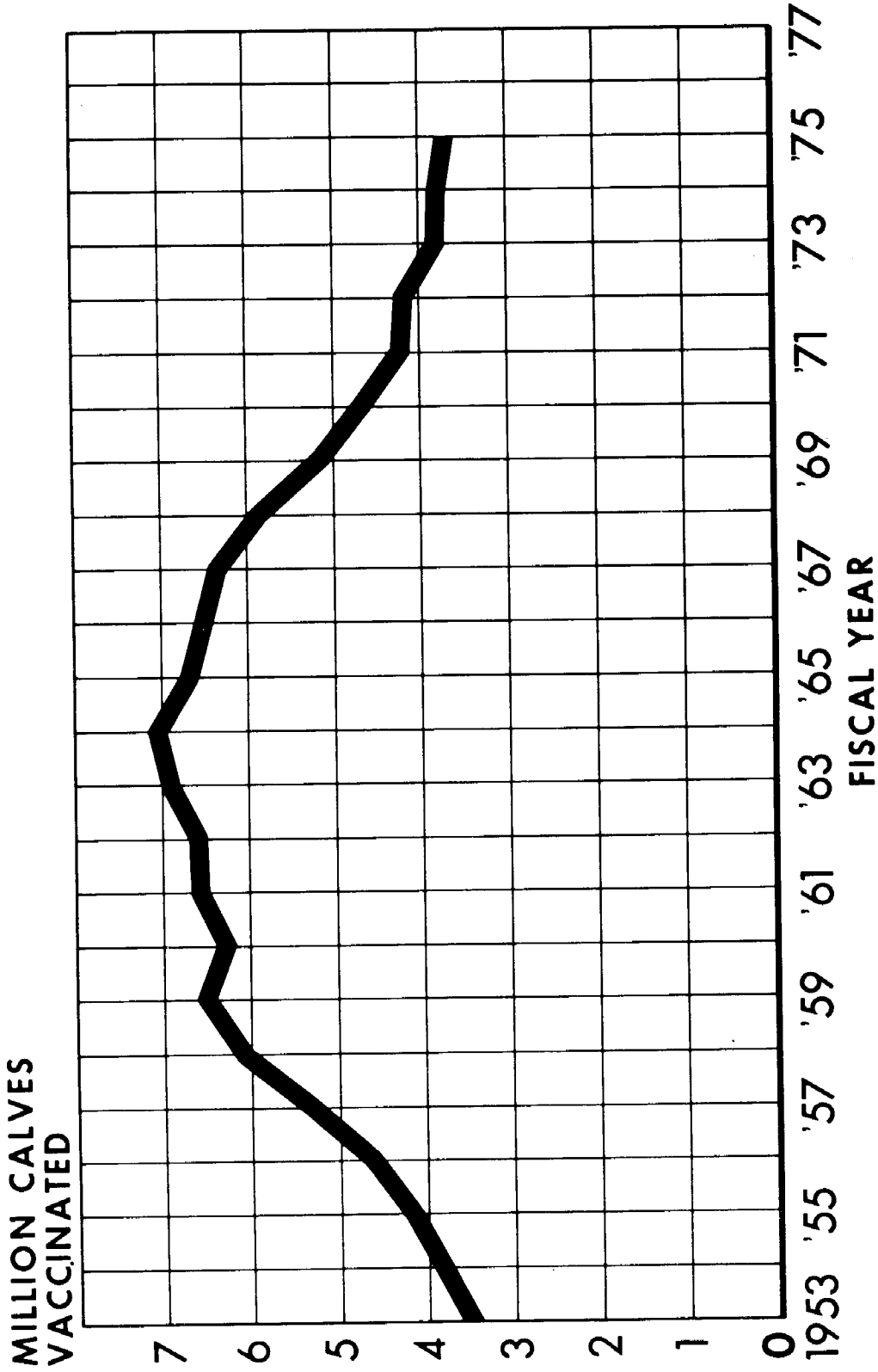
U.S. DEPARTMENT OF AGRICULTURE

VETERINARY SERVICES

ANIMAL AND PLANT HEALTH INSPECTION SERVICE

Brucellosis Eradication

# CALVES VACCINATED



U.S. DEPARTMENT OF AGRICULTURE      VETERINARY SERVICES      ANIMAL AND PLANT HEALTH INSPECTION SERVICE