

Bovine Infertility Study

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PURPOSE: The development of four regional breeding centers for beef cattle as part of the Thai counter-insurgency program has indicated that bovine infertility is a widespread and costly problem in Thailand. Although infertility can result from such different factors as nutritional deficiencies, poor husbandry practices, and adverse climatic effects, the role that infectious disease might be playing in infertility was a problem that could be more easily studied with available laboratory resources. From disease surveys that have been made, it was apparent that both brucellosis and leptospirosis were widespread among the cattle population but their effect on the newly established herds and breeds in the regional breeding centers was unknown. Because infertility in cattle is militarily important as a probable significant economic problem in Thailand, a comprehensive study was begun to determine the extent of the problem and the effect infectious disease might have on it.

DESCRIPTION: The study was conducted at the western regional breeding center of the Thai Ministry of Defense's Mobile Development Unit near Saiyok in Kanchanaburi Province. The area consists of approximately 200 acres of newly developed irrigated pasture with excellent facilities for handling and caring for the cattle that are kept there. In addition to having a resident veterinarian and several trained technicians who assist him in inseminating cows and performing other veterinary activities, there is a hospital barn, and small laboratory and pharmacy where specimens may be collected, cultured, and preserved for future study. Visits were made to the breeding center at monthly intervals by the principal investigators for the purpose of performing rectal examination on each cow for pregnancy diagnosis, assessing the health of the reproductive tract, and determining if established pregnancies were progressing satisfactorily. Cows that failed to conceive after three services, or which aborted, received a complete genital examination which included culturing for bacteria. In addition, sera for both Brucella and Leptospirosis titer determinations were collected quarterly or at those times when they were indicated for diagnosis, such as following an abortion. In support of these activities a detailed system of keeping records of the breeding history of cows and the diagnostic tests performed was instituted. Efforts were made to facilitate the collection of diagnostic specimens at any time by stocking media and necessary instruments at the breeding center and writing and demonstrating to resident personnel those procedures to be followed when performing such techniques as a necropsies.

PROGRESS: The records accumulated in this study confirm the impression that breeding performance should be improved. The information presented in Table 1 partially explains one reason for the observed infertility. Examination of the teeth of the cows showed that many animals were present in the herd that were probably too young to be productive. Exclusive of this group there were only twenty two animals, or approximately 20%, that were infertile. However, the conception rate, as calculated by dividing the number of pregnancies by the number of breedings as diagrammed in Figure 1, shows that there is a great amount of rebreeding occurring and that conception is well below 50% and probably averages approximately 30%. Initially the investigators have felt that this low rate of conception was due to the failure of responsible personnel to properly detect heat and inseminate correctly. In a number of cases cows were bred several times following the time pregnancy diagnosis later showed that conception had taken place. Accordingly, responsible personnel received a month of supervised intensive training in the application of breeding principles and artificial insemination techniques in late 1969. However, in spite of this, no improvement occurred in the

conception rate. Such performance often characterizes herds that are affected by cattle infertility diseases. In support of this possibility is the data presented in Table 3. The serum titers to various strains of Leptospira suggest an exposure to this disease in well over half the animals. Present also, but of apparently less significance, is the number of animals that have positive serum titers for brucellosis. Unfortunately, the laboratory findings for followup serum samples in reactor animals could not be processed by the laboratory so it is not possible to determine what changes occurred in titers or how they were related to an individual animal's breeding performance. From the large number of pregnancy examinations that were performed during the course of the year, all pregnancies, once diagnosed, have proceeded to term without abortion. It was not possible to conduct an adequate laboratory followup of the two cows that died spontaneously during the year, but the causes of death were apparently not related to the herd problems that were experienced. Bacteriologic findings from cervical cultures of animals that have been repeatedly bred are not conclusive.

Table 1. Pregnancy Status Of Study Cows

Pregnant cows	
Calved	30
Not yet calved	59
Non pregnant cows	
Bred	21
Anestrus	1
Adolescent (Less than 2 yrs)	29

Table 2. Leptospirosis And Brucellosis Titters

Number of Animals in Herd		140
Leptospirosis:	1/50	11
	1/100	33
	1/400	26
	1/1600	14
Number of Positive Leptospirosis Titters/ Number Animals in Herd		84/140
Brucellosis: Positive titers:	1/25	26
	1/50	9
	1/100	1
Number of Positive Brucellosis Titters/ Number Animals in Herd		36/140

FIG 2 BOVINE INFERTILITY PROJECT

