

Survey to Estimate Significance of Certain Zoonotic Diseases and Their Military Importance in Thailand

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Period of Survey: 22 May — 6 June 1972

OBJECTIVE: The objective of the survey was to determine the principal sources of information from which data concerning the incidence of certain zoonotic diseases may be obtained and to collect and evaluate as much of the same as could be accomplished in the time period allowed.

BACKGROUND: A review of the literature revealed that little if any work has been done to determine the significance of zoonotic diseases in Thailand. A study conducted by USOM in cooperation with the RTG Department of Livestock 1967—1969 in Northeast Thailand showed that in Changwat Loei, out of a sample of 2,689 cattle and buffalo bled only 28 head were positive and 69 head suspects for Brucellosis, slightly more than 0.1% of reactors. This was the result of a pilot survey reported in USOM AD/AG Memo dated 2 August 1968. An extensive survey in Konkaen, Udorn, and Ubol provinces followed. The exact results have not been made available, however, it was reported that the incidence of brucellosis ran only slightly higher than in the pilot study. The conclusion drawn from this study is quoted: "The results of the brucellosis testing show a very low incidence in the areas tested. This should not adversely affect the early stages of intensified livestock production. However, there is enough brucellosis present that when animals are concentrated on feed lots, serious losses due to abortion will be a constant threat." This is the type of information that is absolutely necessary for planning livestock programs.

METHOD: A list of zoonotic diseases known to be present in Thailand was drawn up. Those selected for the study were; Foot & Mouth Disease, Brucellosis, Tuberculosis, Leptospirosis, Rinderpest, Hog cholera, Rabies, Anthrax, Encephalitis, Hemorrhagic septicemia and Trichinosis.

A form was designed for interviewing. This included headings as follows: species infected; areas of occurrence; reported incidence, control program if applicable; economic and public health significance and the source of information for each disease listed.

Interviews in Bangkok included the Royal Thai Department of Livestock, FAO, College of Veterinary Medicine, Chulalongkorn University, and the Division of Agricultural Economics of the Ministry of Agriculture. Time permitted only a selected sample of interviews from the field. The Northeastern Region of Thailand and part of the Central Plain was chosen for the field survey. The Northeast Region contains 40.5% & 55.9% of the kingdom total number of cattle and buffalo respectively and a high percentage of hogs. This corresponds to 1/3 of the total human population of the Kingdom in the same region. See Table II. Source DAE.

Main livestock stations, forage crops centers, and other research centers were selected within the regions and key personnel were interviewed.

Table 1.
Estimated Livestock Population in Thailand 1961 — DAE*
Reported Animal Survey of Cattle, Buffalo, and Swine.

Region	Cattle	Buffalo	Swine
Northeast	1,892,108 40.5%	3,195,834 55.7%	1,403,466 27.3%
Central	1,552,795 33.3%	1,652,206 28.8%	2,352,197 45.8%
South	594,495 14.9%	230,593 4.0%	810,792 15.8%
North	527,571 11.3%	655,921 11.4%	563,792 11.0%
Total for Kingdom	4,666,966	5,734,500	5,133,244

* Division of Agriculture Economics.

RESULTS & DISCUSSION.

The diseases investigated are summarized categorically below:

FOOT & MOUTH DISEASE.

Species	Reported Incidence/ Total Population	Area Occurrence/ Total Area	Economic Significance	Control Program	Total Sources
Cattle	80/1,196,863 ¹⁾	4/28 ²⁾	B9,240 ³⁾	Q.V. ⁴⁾	16
Buffalo	41/168,228	2/15	—	V.E.	5
Swine	21/383,522	2/20	B2,000	V.E.	12

Foot Notes:

- 1) i.e. 80 cases from a total sample of 1,196,863 head
- 2) i.e. four general producing areas out of 28 as defined by the one interviewed.
- 3) i.e. the total value of known losses due to death; does not account for other economic loss such as "downtime" or inefficiency of draft animals affected.
- 4) i.e. Q = quarantine; V.E. = voluntary elimination by owner. All tables are in this pattern and represent the period of 1 Jan—31 Dec 71. C.E. = Completely eradicated; V = Vaccination.

From the table above it is noted that a very low incidence of Foot and Mouth Disease has been reported in the areas surveyed.

Note that there were four areas reporting FMD among cattle in the 28 areas sampled. The individual cases were not concentrated. This indicates that there were no major outbreaks and implies that swift and effective suppressive measures were taken. The same situation exists in the case of buffalo and swine affected with FMD. The principal areas reporting FMD in all three species were Udorn and Konkaen. Saraburi reported only 5 cases among 1,400 head of cattle at the Thai Danish Dairy Farm (introduced from the outside by newly purchased animals) and Muak Lek reported 20 cases among swine, all on the the livestock station. The Organization of Foot and Mouth Disease at Pakchong reported 26 cases in cattle, one in swine and 20 in buffalo for all regions excluding the free zone located in the far south of Thailand.

BRUCELLOSIS.

Species	Reported Incidence/ Total Population	Area Occurrence/ Total Area	Economic Significance	Control Program	Total Sources
Cattle	34/196,863	10/28	B33,000	V.E.	16
Buffalo	*/168,228	*/15	*	V.E.	5
Swine	20/382,522	2/20	B38,000	V.E.	12

* None reported.

The findings of the survey of reported incidence of Brucellosis shows only slightly higher rate than what was reported in 1968 by the USOM team in Loei Province. A difference of .17% versus .01% in the Loei survey. In cattle, abortion is the most frequently observed symptom. In swine, abortion and arthritis are seen most frequently. The consensus of opinion of authorities interviewed in the field was that the farmers do not recognize brucellosis in cattle since most of the Bos Indicus (native Indian stock) showing positive to serologic test do not show the abortion syndrome. There is a greater incidence of abortion in swine, these same farmers do believe brucellosis exists in this species. The same is true in Bos taurus (European stock) for the same reasons. The first interview reported in annex B supports this opinion.

It appears from the interviews that most buffalo and many of the native cattle are not being tested in the villages.

The Forage Crop Station at Pakchong reported 10 of the total of 34 reported in 1971. These ten were from a total of 650 animals tested.

1. Leptospirosis, 2. Rinderpest, 3. Encephalitis, 4. Anthrax. 5. Trichinosis.

Species	Reported Incidence/ Total Population	Area Occurrence/ Total Area	Economic Significance	Control Program	Total Sources
Cattle	*196,863	*/28	*	(4) V (1) C.E.	16
Buffalo	*/168,228	*/15	*	(2) C.E. (1) Q.V.	5
Swine	*/383,522	*/20	*	(2) C.E. (4) V. (1) V.E.	12

The five diseases listed at the top of the table have not been reported from any of the areas surveyed for the year of 1971.

However, provincial hospitals have seen encephalitis, trichinosis and even anthrax as reported by reliable sources outside this survey.

The eating habits of Northeastern Thai people are conducive to transfer of these diseases from animal to man, i.e. frequent consumption of uncooked or inadequately cooked meat.

TUBERCULOSIS.

Species	Reported Incidence/ Total Population	Area Occurrence/ Total Area	Economic Significance	Control Program	Total Sources
Cattle	23/196,863	4/28	B151,000	V.E.	16
Buffalo	*/168,228	*/15	*	V.E.	5
Swine	*/383,522	*/20	*	V.E.	12

* None reported.

T.B. in cattle was reported from Tab Kwang, Muaklek, Pakchong and Konkaen. A total of 23 cases were reported from a sample of 4,780 head tested in these four areas. It appears the buffalo and swine are not generally being tested for T.B. The control measures seem to be grossly inadequate when left to a voluntary elimination basis. The characteristic of infecting heterologous hosts is a main factor complicating control of tuberculosis.

RABIES.

Species	Reported Incidence/ Total Population	Area Occurrence/ Total Area	Economic Significance	Control Program	Total Sources
Cattle	16/196,863	5/28	B43,600	V	
Buffalo	*/168,228	*/15	*	V	
Swine	*/383,522	*/20	*	V	

Additional information from MEDCAP, at Udorn Air Base including 61 villages within a 10 mile radius of the base. A total of 20,895 dogs were immunized with Rabies vaccine, 1,200 human exposures, 1,439 suspected dogs and heads sent to the diagnostic laboratory, SEATO Med Lab, 62 of these cases were positive. This infectious disease affected mostly dogs, but all mammals including humans are susceptible.

HEMORRHAGIC SEPTICEMIA.

Species	Reported Incidence/ Total Population	Area Occurrence/ Total Area	Economic Significance	Control Program	Total Sources
Cattle	147/196,863	10/28	B135,140	V	
Buffalo	459/168,228	7/15	B686,300	V	
Swine	25/383,522	3/20	B 26,600	V	

* None reported

Hemorrhagic septicemia was quite widespread. In ten areas of the 28 surveyed there were cattle affected. Seven areas of 15 surveyed had a relatively high incidence. The distribution of the disease was wide. Total economic loss was also heavy relative to total population of livestock in the Northeast region. The chief method of control was by inoculation of a Pasteurella bacterin.

HOG CHOLERA.

Reported Incidence/ Total population	Area Occurrence/ Total Area	Economic Significance	Control Program	Total Sources
44/383,522	3/20	B23,150	Q.V.	12

The incidence of hog cholera seems quite low to the investigators. Since it is a common practice of villagers to slaughter and consume ailing animals, it is believed that the number of cases in the village and not reported may be much greater. Out of 44 cases reported, there were 29 cases from Konkaen.

Table 11.
Serum JE Titer of the Horses in Tapra Animal Breeding Section in August 1970.

Name	Titer	Name	Titer	Name	Titer
Ngam-gnae	320	Wang-ngen	640	Khab-rong	160
Kraw-thong	160	Wah-thamnieb	320	Chintana	160
Harn-yow	40	Sa-makki	40	Ngam-chamrieng	40
Ga-grabaad	320	Klin-pikul	160	Kah-archa	80
Sia-sala	80	Kamchai	320	Khen-kham	80
Wat-dhaporn	640	Hor-muad	80	Rong-long	320
Chand-dhib	40	Cham-nancha	80	Chan-dhari	80

At the 3rd animal breeding section in Tapra, twenty horses out of 100 died from a disease of unknown etiology. Treatment did not alter the clinical source of the disease whose clinical signs were suggestive of encephalitis to the breeding section veterinarians (See Annex B, interview #2). The data in table 1 shows serum JEV titers on horses at the Tapra section as determined by the Japanese Virus Institute. Since JEV infections in domestic animals are widespread in Thailand, the significance of these titers in relation to the disease experienced in horses there is unknown.

ANNEX A
LIST OF PERSONS INTERVIEWED

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| 1. Mr. Supote Sinives | M. S., Oregon State University
Livestock Officer
Tab Kwang Livestock Station
Saraburi Province. |
| 2. Dr. Chamnean Satayapunt, D.V.M. | Tab Kwang Student Training Farm,
Saraburi. |
| 3. Dr. Knud Vinther, D.V.M. | Thai-Danish Dairy Farm
Muak Lhek, Saraburi. |
| 4. Dr. Pracal Smitinondana, D.V.M. | Organization of Foot & Mouth Disease
Laboratory, Pak-Chong, Korat. |
| 5. Mr. Komchakr Pichaironnarongsongkram | M.S., Alanata University, P.I.
Forage Crop Station, Pak-Chong,
Korat. |
| 6. Mr. Anan Chinvala | M.S. Agronomy
Taphra Livestock Station Officer
Konkaen. |
| 7. Dr. Sarmart Charanyanont, D.V.G. | Veterinarian In-charge, Taphra Livestock
Station, Konkaen. |
| 8. Dr. Manit Shanitwong, D.V.M. | Veterinarian Local Practitioner
Konkaen. |
| 9. Lt. Vichian Uchamrut | 3rd Animal Breeding Center Taphra
Konkaen. |
| 10. C. C. McLeord | Farm Advisor, Borabu Pasture and Range
Development center, Mahasarakarm
N.Z. Columbo Plan. |
| 11. Mr. Prasitl Sanseha | Animal Husbandry Officer
Mahasarakarm Livestock Station
Mahasarakarm. |
| 12. Mr. Nipon Chantarapoh | M.S. Panjab Agr. University
Chief, Dept. Animal Science
Konkaen University
Konkaen. |
| 13. Dr. Michael M. Albersmeyer | Chief, Vet Services
432nd USAF Dispensary
Udorn Air Force Base
Udorn. |
| 14. Mr. Prakarn Virakul | B. Sc. Agr.
Ban-Naka Agriculture Economic Center
Nongkai. |
| 15. Mr. Narong Sai-tong | B. Sc. Agr.
Chief, Demonstration Farm
Srichlengmai, Nongkai. |
| 16. Mr. Vech Home-Wong | Provincial Vet
Nongkai. |
| 17. Mr. Kanchai Tar-Horm | Chief Animal Breeding & Selection
Center, Nongkai. |
| 18. Mr. Arome Limpananont | Acting Chief of Animal Breeding &
Selection Center, Udorn. |

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| 19. Mr. Paktra Lert—Lum | Regional Vet Udorn |
| 20. Dr. Sanan Ratana—o—lan, D.V.M. | M. S. Cornell Univ. |
| 21. Mr. Preecha Chaiburut | Regional Vet Korat.
Increasing Protein Production Center
Panomsarakarm
Chacherngsao. |
| 22. Prof. Tieng Tansanguan | Dean of Vet Faculty
Chulalongkorn University
Bangkok. |
| 23. Dr. Chua Wongsongarn, D.V.M. | Acting Director,
Department of Livestock Development
Bangkok. |
| 24. Mr. Sawaeng Thongsoot | Farms Representative
Borabu, Mahasarakarm. |
| 25. Dr. C.P. Pilla | Regional Vet Officer
F.A.O.
Bangkok. |
| 26. Dr. Somnuk Sriplung | Agriculture & Economic Section
Ministry of Agriculture
Bangkok. |
| 27. Dr. Nuam Settachan | Director
Korat Provincial Hospital
Korat. |
| 28. Dr. Nopadon Thongsotit | M. D. Konkaen Provincial Hospital
Konkaen. |

ANNEX B

SUMMARY OF OPINIONS

May 26, 1972: Khun Supote Sinives, M.S., Oregon State, Livestock Officer, Tabkwang Livestock Station. Farmers in and around Tabkwang are not convinced that Brucellosis exists. Cows tested and found positive still bear live calves. Especially, this is true of native cows (Bos indicus) which are those most commonly raised. Abortions are quite rare, thus the conclusion drawn by farmers.

Bos taurus (European Cattle) on the other hand are quite sensitive to Brucellosis and have a high incidence of the disease. Those tested and found positive are also those which have aborted calves.

The respondent reported that of a sample of Bos indicus tested in Tak Province, 60% were positive without abortion symptoms.

May 28, 1972: Lt. Vichlan Uchamrut, 3rd Animal Breeding Section, Taphra, Konkaen, 20% of the horses show high titer on Japanese Encephalitis Serological test. Disequilibrium of the head, neck and light reflex of the pupil is slow, muscular tremor, cool on extremities, monthly normal temperature rectal (38.5°C).

Stallions are put in paddocks with 20 mares and come in after one day with these symptoms. In addition, some will hit their head on the wall and show hyperephidrosis. Predisposing cause may be weakness or decrease in body defence from breeding and sudden changes in environment.

The treatment given affected horses at this station are intramural and intradural injections of antibiotics. However animals treated have not responded to these treatments. Ultimately, all of affected horses have died within 5 days.

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