



# INFORMATION CIRCULAR

SPC Library  
41554

Bibliothèque CPS

Date  
March 1976

14026

Classification  
Animal Production and Health

Library reference copy  
Not for loan

Serial No.  
71

## PRELIMINARY INFORMATION ON THE INTESTINAL PARASITES OF LIVESTOCK IN TONGATAPU, TONGA

by

Barbara Daft  
Peace Corps Volunteer  
Ministry of Agriculture  
Tonga (1973)

Little or no study has been made of parasites in Tongan livestock. The work described below was undertaken to determine the kinds of intestinal parasites found on livestock on Tongatapu. Only a small number of samples has been examined and it is likely that not all the parasites present have been found.

Faecal samples were examined for ova by a sugar flotation method (1), and fluke sedimentation (1) (cattle only). Other samples were cultured to rear infective larvae which were sent overseas for identification.

Part I of this Circular describes the identification of ova or adult parasites in Tonga and part II reports on the identification of infective larvae by Mr Ifor L. Owen - Parasitologist, Veterinary Laboratory, Kila Kila, Department of Agriculture, Stock and Fisheries, Konedobu, Papua New Guinea, who kindly offered to make the identifications.

### Part I: Identification of ova or adult parasites

#### Cattle

Fifty-eight faecal samples from various parts of Tongatapu were examined for nematodes, tapeworms and flukes. It was planned to identify all ova by measurements of size and thickness of wall layer(s), but the author was advised against this method of identification because many nematodes have ova of similar morphology that are difficult to differentiate from one another. Instead, identification of infective larvae was recommended.

Of 58 samples, approximately 50 per cent contained one or more species of nematode ova, 30 per cent contained fluke ova, and none contained tapeworm eggs. The fluke ova were tentatively identified as those of a stomach fluke. To confirm the identification, adult flukes are required but no flukes were found in the samples.

90/76 14026

The following parasites were identified:

Capillaria sp.  
Bunostomum sp.  
Strongyloides papillosus  
Trichuris sp.  
Haemonchus sp. (adult identified).

### Pigs

Twelve samples from Tongan village pigs and imported breeds were examined for nematodes only.

The following were identified:

Metastrongylus sp.  
Ascaris lumbricoides (adult found)  
Trichuris suis  
Strongyloides ransomi  
Oesophagostomum sp.

### Chickens

Twenty faecal samples and slaughtered birds were examined for nematodes and tapeworms. The following were identified:

Capillaria sp.  
Ascaridia galli (adult found)  
Heterakis gallinae (adult found)  
Syngamus trachae (adult found)  
Acuarias sp.

Tapeworms were found but not identified.

### Horse

One faecal sample was examined; it contained the following parasites:

Strongylus sp.  
Parascaris equorum

### Ducks

One sample was examined; it contained the following parasite:

Capillaria sp.

## Part II: Identification of infective larvae

To rear infective larvae, the faecal samples were mixed with vermiculite and enough water to moisten the mixture and then allowed to stand at room temperature in lightly closed jars for 10 days. The lid was then replaced with several layers of gauze fastened to the jar with a rubber band, then the jar was inverted and immersed in about 1/4 inch of water in a petri dish. The next day the water was examined for larvae with a dissecting scope and if present, the larvae were collected using a drawn-out pasteur pipette. After collection, 70 per cent Ethanol (hot) was added to stretch and preserve the specimens, (method adapted from Mr Ifor L. Owen).

### Cattle

From 30 samples, only seven produced a good "crop" of larvae when cultured (one sample from a recently imported bull was included). The following were identified:

Strongyloides sp. (identification tentative)  
Oesophagostomum sp.  
Haemonchus sp.  
Cooperia sp. (C. oncophora)  
Trichostrongylus sp. (T. axei)  
Nematodirus sp.

### Pigs

Two samples containing many eggs were cultured. The following was identified:

Oesophagostomum sp.

### Goat

One sample from a heavily infected goat contained the following parasites:

Trichostrongylus axei  
Trichostrongylus colubriformis

### Discussion

The difference in the parasites of cattle found by the two methods can be explained as follows. Firstly, nematodes identified by ova morphology were only those whose ova have a distinct morphology. i.e. Capillaria, Trichuris, Strongyloides and Bunostomum. No attempt was made to identify ova of similar morphology, i.e. Oesophagostomum, Haemonchus, Cooperia, Ostertagia, Trichostrongylus, which were without doubt frequently present among the 58 samples reported on in Part I. Secondly, Capillaria sp., Bunostomum sp., and Trichuris sp. were present in small numbers only (less than 5 per cent of 58 samples) and therefore it is not surprising they were not found among the cultured specimens.

According to Mr Ifor L. Owen, Nematodirus sp. is usually not found in tropical climates. However, its presence can be explained. It was probably present in the sample obtained from the recently imported New Zealand bull. The same may apply to Ostertagia, found in the same sample with Nematodirus, and not found in any of the other 57 samples.

#### Reference

I. Sloss, M.W. 1961 Veterinary Clinical Parasitology. Ames, Iowa, State University Press.

---

## ISSUED IN THIS SERIES

	<u>Classification</u>
1. Annual Conference of O.I.E. held in Paris 13th - 18th May, 1968. Report of S. P. C. Observer. September 1968.	Livestock Production and Health
2. South Pacific Commission Publications Series. October 1968.	Publications
3. Free Diving Without Breathing Apparatus - Its Accidents. March 1969.	Public Health
4. "A" Level: Australia's Notification on Bovine Pleuropneumonia Regulations. March 1969.	Plant and Animal Quarantine
5. Study Tour to Noumea, Brisbane, Territory of Papua and New Guinea and British Solomon Islands Protectorate. March 1969.	Tropical Crops
6. "A" Level: Agricultural Education - Bulletin N° 1. April 1969.	Agricultural Education and Extension
7. Introduction and Spread of Culicoides and Other Insect Species by Aircraft. May 1969.	Public Health
8. Diarrhoeal Diseases in Adults. May 1969.	Public Health
9. "A" Level: Agricultural Education - Bulletin N° 2. May 1969.	Agricultural Education and Extension
10. "A" Level: Agricultural Education - Bulletin N° 3. November 1969.	Agricultural Education and Extension
11. Agricultural Extension Workshop - Western Samoa. November 1969.	Agricultural Education and Extension
12. Asian-Pacific Weed Science Society. December 1969.	Tropical Crops
13. The Status and Potential of the Chilli Industry in the Solomon Islands. December 1969.	Tropical Crops
14. Manpower Planning in the South Pacific. March 1970.	All

- |     |  |   |
|-----|--|---|
| 15. | Fibreglass Water Tanks. April 1970.  | Public Health<br>Engineering                                |
| 16. | U.N. World Youth Assembly. May 1970.   | Social Welfare<br>and Youth                                 |
| 17. | News and Views from the Journals.<br>June 1970   | Public Health   |
| 18. | Acute Rheumatism and Chronic Rheumatic<br>Carditis in Fiji. June 1970.                                 | Public Health   |
| 19. | Public Health Problems of Gonorrhoea<br>and Syphilis. June 1970.                                       | Public Health   |
| 20. | Clinical Aspects and Diagnosis of<br>Leprosy. June 1970.   | Public Health   |
| 21. | News and Views from the Journals 2 : On<br>Insects and Their Control. June 1970.                       | Public Health<br>Environmental Health<br>and Vector Control |
| 22. | Breadfruit Diseases in the South Pacific.<br>June 1970.  | Tropical Crops  |
| 23. | Second World Consultation on Forest<br>Tree Breeding. June 1970.                                       | Forestry  |
| 24. | Agricultural Research in the South Pacific<br>July 1970.   | Tropical Crops<br>Livestock Production<br>and Health        |
| 25. | Crown-of-Thorns Starfish. July 1970.   | Fisheries   |
| 26. | Counter-Attack - Crown-of-Thorns<br>Starfish. September 1970.  | Fisheries   |
| 27. | A Simple Field Test for Determination of<br>Salinity of Water Supplies. December 1970.                 | Public Health   |
| 28. | Asian Coconut Community. January 1971.   | Tropical Crops  |
| 29. | O.I.E./F.A.O. Regional Conference on<br>Epizootics in Asia, the Far East and<br>Oceania. January 1971. | Livestock Production<br>and Health                          |
| 30. | Plant Pest Control. January 1971   | Tropical Crops<br>Plant and Animal<br>Quarantine            |

- |     |   |   |
|-----|---|---|
| 31. | The Effect of Cultural Method and Size of Planting Material on the Yield of <u>Colocasia esculenta</u> February 1971. | Tropical Crops                          |
| 32. | Shell-fish and Public Health April 1971   | Public Health<br>Engineering            |
| 33. | Weed Control. August 1971.  | Tropical Crops                          |
| 34. | Taro. August 1971   | Agricultural Research                   |
| 35. | Transmission of Virus Samples.<br>August 1971.  | Plant and Animal<br>Quarantine          |
| 36. | Amyotrophic Lateral Sclerosis and Parkinsonism-Dementia in Guam.<br>September 1971.                                   | Mental Health                           |
| 37. | Training Programmes for Out-of-School Rural Youth. March 1972.  | Agricultural Education<br>and Extension |
| 38. | Control of <u>Aedes aegypti</u> , the Vector of Dengue. September 1972.   | Vector Control                          |
| 39. | Coconut Water as an Emergency Parenteral Fluid. September 1972.   | Public Health                           |
| 40. | Viral Hepatitis. October 1972.  | Hepatology                              |
| 41. | Biological disc treatment of waste waters. December 1972.   | Public Health<br>Engineering            |
| 42. | The Monitoring of Sewage Treatment Plants. December 1972.   | Public Health<br>Engineering            |
| 43. | The Fifth FAO Regional Conference on Animal Production and Health in the Far East. December 1972.                     | Livestock Production<br>and Health      |
| 44. | The Septic Tank. January 1973.  | Public Health<br>Engineering            |
| 45. | How to deal with the sludge produced by sewage farms in the South Pacific.<br>January 1973.                           | Public Health<br>Engineering            |
| 46. | The convenience of the metric system.<br>February 1973.   | Public Health<br>Engineering            |

- |     |   |                                      |
|-----|---|--------------------------------------|
| 47. | Useful References for Animal Production and Agricultural Extension Workers of the South Pacific Commission territories. March 1973. | Animal Production                    |
| 48. | Twelfth World Congress of Rehabilitation (Sydney, Aug. 27 - Sept. 1, 1972). March 1973.   | Mental Health                        |
| 49. | Primary Amoebic Meningo-Encephalitis. April 1973.   | Epidemiology                         |
| 50. | South Pacific Agricultural Extension Survey - 1967. April 1973.   | Agricultural Education and Extension |
| 51. | Collection and Shipping of Serum Specimens for Antibody Studies. May 1973.  | Public Health                        |
| 52. | Fruit Cultivation. June 1973.   | Tropical Crops                       |
| 53. | Recent Developments in Education in the South Pacific. August 1973.   | Education                            |
| 54. | Shellfish Poisoning in the South Pacific. February 1974.  | Public Health<br>Fisheries           |
| 55. | Special Project - Vegetable Production in the South Pacific. January 1974.  | Tropical Crops                       |
| 56. | Comments on Experiments Recently Undertaken in some Pacific Islands on certain varieties of Vegetables. March 1974.                 | Tropical Crops                       |
| 57. | Regional Planning. March 1974.  | Economic Development                 |
| 58. | Some Aspects of Pasture Research and Development. April 1974.   | Livestock Production                 |
| 59. | Something New in Sewerage : The Bio-drum. September 1974.   | Public Health                        |
| 60. | Solar Energy. Economic appraisal of a solar water heater. November 1974.  | Public Health                        |
| 61. | Sewage Treatment in the Pacific - Mini Glossary of Terms Used. November 1974.   | Public Health                        |



- |     |   |                                 |
|-----|---|---------------------------------|
| 62. | Potential of Animal Feed Production in Western Samoa. November 1974.  | Livestock Production and Health |
| 63. | Names of Food Plants in Niue Island (South Pacific). November 1974.   | Nutrition<br>Tropical Crops     |
| 64. | Some Effects of Temperature on Pasture Germination and Growth. April 1975.  | Livestock Production and Health |
| 65. | The Marketing of Fresh Vegetables. May 1975.  | Vegetable Production            |
| 66. | Special Project on Vegetable Production - Results of 1974 Variety Trials. June 1975.  | Tropical Crops                  |
| 67. | Principal 1974 Vegetable Growing Results for the Pirae Agricultural Research Station, Tahiti (French Polynesia). June 1975. | Tropical Crops                  |
| 68. | Evaluation of Broiler (Meat Chicken) Performance. September 1975.   | Livestock Production and Health |
| 69. | Towards a Better Mosquito Control Policy. September 1975.   | Public Health                   |
| 70. | Bronchiogenic and Lung Cancer in the South Pacific. September 1975.   | Public Health                   |
| 71. | Preliminary Information on the Intestinal Parasites of Livestock in Tongatapu, Tonga. March 1976.                           | Animal Production and Health    |

