SENDING PARASITE SAMPLES TO THE CENTRAL VETERINARY LABORATORY

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INTRODUCTION

Parasites are animals that live in or on other animals and feed from them. They are an important cause of disease and loss of production in all types of livestock.

Parasites which live or feed on the outside of animals (external parasites) cause loss of production by worrying the host animal so that it eats less, by sucking blood, and by destroying tissue. They may also spread disease. For example, cattle tick spreads a blood parasite (*Babesia* sp.) that causes tick fever (babesiosis).

Parasites that live inside animals (internal parasites) cause loss of production by destroying tissue, by feeding on the host's blood or other tissues, by feeding on the host animal's own feed and by blocking body passages such as the intestines (gut).

Drugs which are used to kill parasites are expensive. They should only by used when it is certain that parasites are causing a problem. To find this out, extension officers should collect specimens and send them to the Central Veterinary Laboratory at Kila Kila. The laboratory staff there will examine the specimens and decide whether treatment is necessary.

If specimens are not sent, then the project owner's money may be wasted on treatment which will not help his animals and the extension officer will not have done his job as an advisor correctly.

This article describes how specimens of parasites should be collected for submission (sending) to Kila Kila.

NOTE: A Veterinary Specimen Advice card giving information about the sick animals must be sent with any material submitted to Kila Kila. Instructions or how to fill out one of these cards and general advice on how to send specimens is given in the article Introduction to the Central Veterinary Laboratory in this issue of HARVEST.

EXTERNAL PARASITES

It is usually easy to see external parasites during careful examination of an animal. The methods used to collect these parasites are described below.

a) Ticks. Remove ticks from the host animal by gently pulling them so that the mouth parts (which will be stuck into the skin) are not broken off. Submit them either live (in a tube or jar with an opening for air so that they can breathe) or, if it will take more than 3 or 4 days for them to reach the

Laboratory, fixed (in 10% formalin).

b) Fleas and lice. Remove these from the host animal after stunning or killing them with insecticide spray or dust by combing or brushing the hair, wool or feathers. Collect the parasites onto a piece of white paper (so that they can be easily seen) and submit them in 10% formalin. For lice, also submit pieces of hair with the eggs (nits) attached. These can be sent in an envelope or tube, or in 10% formalin.

c) Mange mites. Cut the hair around an affected area with scissors. Smear the area with glycerine, and scrape the skin with a scalpel blade over an area of about 2 cm x 2 cm. Press the blade firmly enough to just see bleeding. Put the scurf collected on the blade into a clean, dry tube or jar to submit it for examination.

Instead of this, a skin biopsy can be taken by cutting off a small piece of affected skin and putting it into 10% formalin. This is particularly suitable for post-mortem material (material from dead animals).

d) Other mites. Collect individual mites from hair, wool or feathers and submit them in 10% formalin, or just in an airtight container.

e) Fly larvae (maggots). Collect larvae by gently pulling them from the wound. If an insecticide is used (e.g. some screw worm smear) the larvae will be easier to remove. Submit them fixed in 10% formalin.

f) Flies. Kill with an insecticide spray and submit them in a small cardboard box (e.g. a matchbox) or in a tube or jar. You must make air holes in the lid because flies dry out quickly and fall apart if put into airtight containers. Do not use 10% formalin or other solutions.

INTERNAL PARASITES

Internal parasites are only seen during post-mortem examinations but their presence may be suspected during clinical examination of live animals. Samples of faeces (manure) or smears of blood taken from live animals can be used by the staff at Kila Kila to find out whether parasites are causing a problem in a group of animals.

There are two main groups of internal parasites, those which live in the organs of the body such as the gut, liver, heart etc., and those which live in the blood.

The parasites which live in the organs are called worms. Three types of specimens are used to find out about these worms.

a) Samples of faeces. Counting the number of worm eggs in the faeces is one way for the laboratory staff to find out about worms in an animal's gut.

Samples from several animals are needed to give a true result for the whole group.

Working out what the result of an egg count means is difficult because of several factors such as:-

i) Some worms lay more eggs than others do.

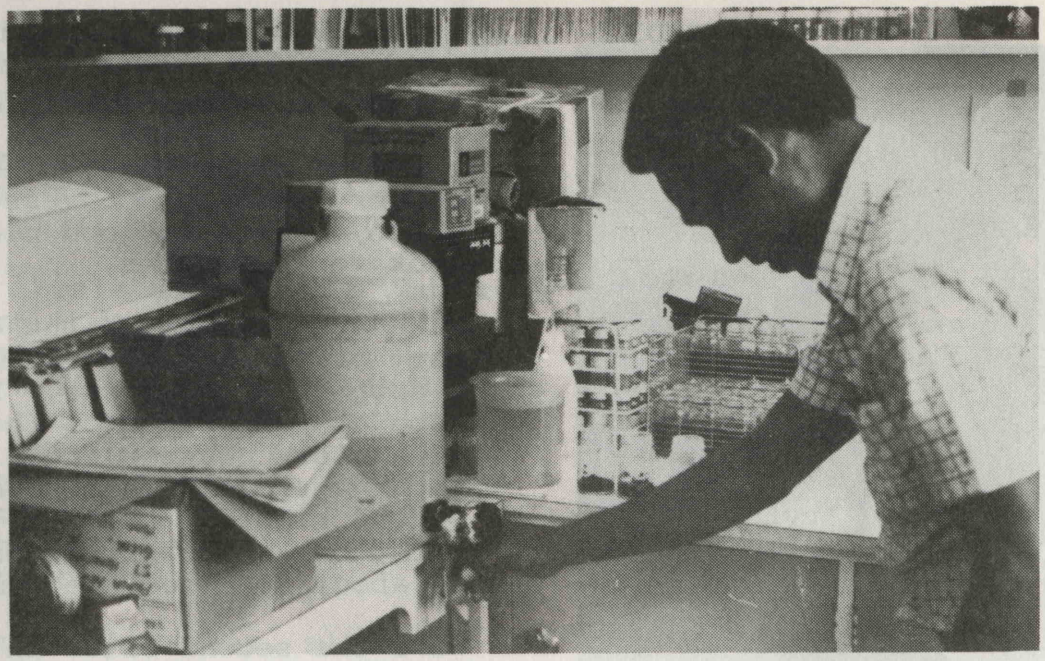
ii) diarrhoea will lead to lower counts.

ii) a parasite may cause severe disease before it begins to lay eggs.

Columba Awui, Moses Abari and Kila Kila - Staff of the Central Veterinary Laboratory - demonstrate how to take a faecal sample from a sheep.

The faeces are collected directly from the rectum.....

they are then put into a plastic jar.



In the Laboratory, the faeces are prepared for the faecal egg count

However, if all these factors are taken into account, faecal egg counts can be a useful test when parasites are suspected of causing disease.

Collect faeces direct from the rectum or cloaca, or collect fresh manure as it is dropped. Manure from the pasture is not much use, because the eggs will quickly hatch and only a few will be left when the sample is examined in the laboratory. Fill plastic jars with the faeces, and keep it cool (to delay hatching of eggs) when submitting it.

It is especially important in this case to give details and dates of any drenches (worm treatments) which have been given to the animals. This information should be written on the Veterinary Specimen Advice Card.

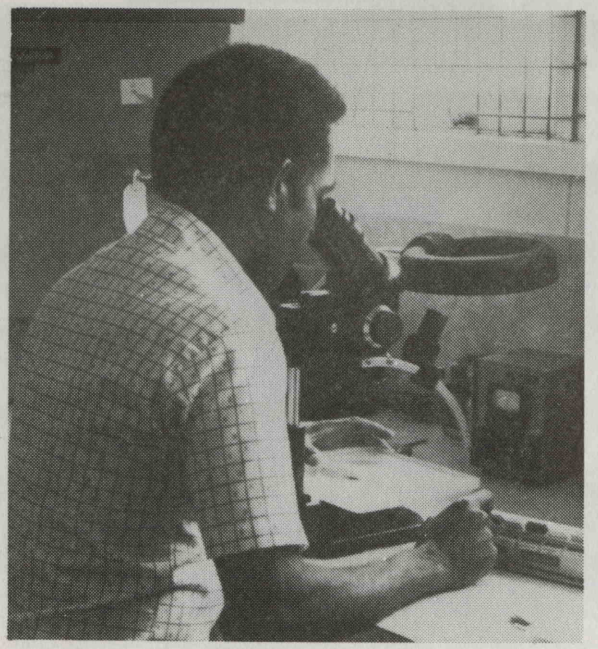
b) Samples of stomach and intestinal contents. These can only be taken during post mortem examinations. During the examination, samples of the contents of the stomach, the small intestine and the large intestine can be taken and preserved in formalin using 1 part of 10% formalin to 2 parts of gut contents. Scrape some of the stomach or intestinal lining (mucosa) into the jar too. The developing stages of many worms can only be seen in this lining.

Label each jar with the place where the sample was taken so that the laboratory staff will know which sample came from which part of the gastrointestinal tract (gut). Do not mix samples from different parts.

c) Samples of worms. During a post mortem examination, you may see individual worms in some parts of the animal's body. These may be round worms, flukes or tape worms. These worms should be collected and put in containers with 10% formalin. The containers should be labeled with the name of the part of the body where the worms were found.

d) Blood parasites

Two kinds of samples are used to investigate blood parasites. The first is made from a drop of blood and is called a blood



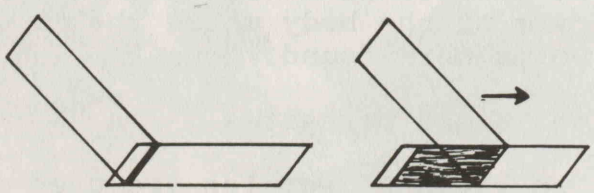
Counting worms from a sample of sheep stomach contents.

smear. The second is made from a small piece of brain tissue which has a lot of very small blood vessels in it. This is called a brain smear.

Smears are made using glass slides. Check that the slides are clean and then rinse them in alcohol and dry them before making a smear. Hold the slides by the edge and take care not to get fingerprints, grease or dust on them as this will spoil the smear.

1) Blood smears. There are two kinds of blood smears, thin smears and thick smears.

Thin smears are made by spreading a drop of blood across a glass slide.

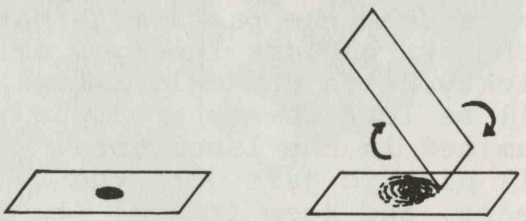


Making a thin blood smear

Clean the animal's tail or an ear and allow it to dry. These parts of the animal have plenty of very small blood vessels which makes them good places to look for parasites.

Make a small cut in the cleaned part of the tail or ear so that a drop of blood forms. Pick up some of this blood on the edge of a clean glass slide. Then smear the blood thinly onto a second slide by pushing the first one across it at an angle of about 30^{o} (see diagram).

Wave the second slide in the air for a few seconds and allow it to dry for about half an hour. Then either wrap it in paper straight away, or fix it in absolute alcohol for three minutes first. Label the slide (with an adhesive label or a marking pen or by writing on the paper used to wrap it) before sending it to Kila Kila.



Making a thick blood smear

Thick smears are made by placing a drop of blood at the centre of a slide and spreading it into a small circle (0.5 to 1.0 cm in diameter) using the corner of another slide. Allow the smear to air dry and then wrap and label it as for thin smears.

Smears can also be made from abattoir or post-mortem material. Cut the tissue open and allow some blood and tissue fluid to collect at the base of the incision (cut). Touch the edge of a slide against this

fluid, and smear it across another slide, the same way a thin blood smear is made.

Blood smears taken up to 48 hours after an animal's death can still be quite useful.

ii) Brain smears. If you are doing a detailed post-mortem examination of the animal then you will saw open the skull and remove the whole brain. If you just want to take a brain smear, then you can use a axe to make a hole in the skull without removing the brain completely.

To make the smear, slice a small piece of grey matter (outer part of the brain) from the cerebrum (front part of the brain) and place it on a clean slide. Press a second slide on top of this and crush the tissue. Pull the slide sideways to smear it. Air dry the smear, then either wrap it in paper straight away or fix it in absolute alcohol for 3 minutes first.

NOTE: Smears must not be refrigerated or exposed to moisture or high humidity. If this is done they will absorb moisture and be ruined.

Photographs by Kath Perry.

CONCLUSION

The Central Veterinary Laboratory at Kila Kila is here to help extension officers and project owners to keep Papua New Guinea's livestock healthy. This job can only be done properly if extension officers send specimens to the laboratory whenever they find a health problem in livestock.

It is important that specimens are collected and submitted correctly. Otherwise it may not be possible for the laboratory staff to find out any thing from them.

A Veterinary Specimen Advice Card must be filled out and sent with all specimens (see INTRODUCTION).

Further information and advice on collecting and submitting specimens for examination at the Central Veterinary Laboratory can be obtained from The Chief Veterinary Research Officer (C.V.R.O), Central Veterinary Laboratory, P.O. Box 6372, Boroko, or phone 253588 or 254510.