

International Livestock Research Institute

Training course report

Sample and data collection and processing of samples in the field




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Contents

Project background.....	1
Training summary	2
Training outcomes	3
Labelling.....	3
Different types of labels	3
Format of the barcodes	3
Application of the labels to the cryo vials and the vacutainers.....	3
Consumables	3
Gadgets.....	3
Administering the Questionnaire on a smartphone	3
Sampling workflow and re-organization.....	3
Transportation of samples from the field to the lab	4
Aliquoting of samples and association of the aliquots with the parent samples	4
Labelling of trays.....	4
Storage of aliquots to the trays	4
Storage of the trays in dry ice.....	4
List of participants	5

Project background

The Dynamic Drivers of Disease in Africa Consortium (DDDAC) brings together natural and social scientists in a unique partnership to embark upon an integrated approach to understanding zoonoses (diseases which pass from animals to humans). More than 60% of emerging infectious diseases over the past few decades have been zoonotic. While some quietly decimate poor people's lives and their livelihoods, others have the potential to create dangerous global threats.

A focus on four zoonotic diseases

Funded by Ecosystem Services for Poverty Alleviation (ESPA) for three and a half years, the DDDAC will see environmental, biological, social, political, and human and animal health scientists working on four zoonotic diseases, each affected in different ways by ecosystem changes and having different impacts on people's health, wellbeing and livelihood.

These are:

- Lassa fever in Sierra Leone
- Henipa virus in Ghana
- Rift Valley fever in Kenya
- Trypanosomiasis in Zambia and Zimbabwe

The programme is one of three major research consortia funded by ESPA.

Global partnership

The DDDAC partners are as follows:

- **In the UK:** STEPS Centre; University of Cambridge; Institute of Zoology, London; University of Edinburgh; and University College, London.
- **In Ghana:** Wildlife Division of the Forestry Commission, University of Ghana.
- **In Kenya:** International Livestock Research Institute (ILRI), Nairobi; Kenya Medical Research Institute (KEMRI); and the University of Nairobi.
- **In Sierra Leone:** Kenema Government Hospital; and Njala University.
- **In Zambia:** the Ministry of Livestock and Fisheries; and the University of Zambia.
- **In Zimbabwe:** the Ministry of Agriculture; and the University of Zimbabwe.

The Stockholm Resilience Centre and Tulane University, US, are also DDDAC partners.

ESPA is funded by the UK Department for International Development (DFID), the Economic and Social Research Council (ESRC) and the Natural Environment Research Council (NERC).

Training summary

Organizer: **Kihara Absolomon, ILRI Biorepository Manager**

Lecturer/facilitator: **Kihara Absolomon**

The training was conducted to introduce the different technologies that will be used in the field to the field personnel. The training covered all the aspects of sample and data collection including:

- Labelling
 - Different types of labels
 - Format of the barcodes
 - Application of the labels to the cryo vials and the vacutainers
- Consumables to be used
 - Cryo vials
 - Vacutainers
 - Needles
- The gadgets that will be used
 - A smartphone running on Android
 - External GPS adapter
 - Power bank
 - Car chargers
- Administering the questionnaire on the smartphone
- Sampling workflow and organisation
- Transportation of samples
- Aliquoting of samples
- Scanning of aliquots and association with the parent sample
- Labelling of trays
- Storage of aliquots to the trays

Training outcomes

Labelling

Different types of labels

The participants were introduced to the temporary and permanent labels. The temporary labels will be used in labelling the vacutainers that will be used in drawing blood from the animals. The permanent labels will be used in labelling the cryo vials which will hold the serum and whole blood aliquots. These aliquots will be saved in liquid nitrogen for future use.

Format of the barcodes

The participants were shown the different formats for printing the barcodes. For easier identification of the samples in the database, each sample has a prefix which is used in the barcodes. Some of these prefixes are: BSR (Blood for serum), BDT (Blood in an EDTA vacutainer) and AVAQ (Aliquot).

Application of the labels to the cryo vials and the vacutainers

The participants were shown how to stick the labels to the vacutainers and the cryo vials. The main points which came out were:

- The labels should be stuck vertically, not horizontally for easier labelling.
- If a label is stuck wrongly, it is most likely to be illegible when peeled off. Such labels should be discarded and new labels used.
- If a label is stuck wrongly and cannot be peeled off easily, it is better for a new label to be used to cover the badly stuck label instead of taking time to remove the label and sticking a new one.

Consumables

These are the standard consumables which were used in the field.

- Cryo vials
- Vacutainers
- Needles

Gadgets

- A smart phone running on Android – For holding the electronic questionnaire
- External GPS adapter – For faster acquisition of the GPS coordinates
- Power bank – For maintaining a good level of charge while in the field
- Car chargers – For charging of the different gadgets from the cigarette lighter of the car

Administering the questionnaire on a smart phone

The participants were shown the new way of administering questionnaires using the mobile phones. The questionnaires were converted to an e-form and loaded to the phone. They were taken through navigating the form on the phone, saving the form at different stages, skipping questions, the logic of the questionnaires, the in-built automatic validation in the phone among other features.

Sampling workflow and re-organization

With the new technologies, the team was taught on the importance of re-organising their work flow. The use of the technologies necessitates a sampling coordinator who directs the team on what to do and at which point. The sampling coordinators play a key role in the sampling exercise as they ensure that:

- Determines the animals to be sampled
- Duplicate animals are not sampled
- There is no mix-up of animals and their samples
- Time management during the sampling exercise

Transportation of samples from the field to the lab

The importance of proper sample transportation from the field to the lab was emphasised and re-emphasised. Proper sample handling starts from the time the samples are collected to when the samples reach the liquid nitrogen freezers.

- Serum samples should be transported in room temperature but in a slanted position to allow quick forming of the clot.
- Whole blood samples should be transported in a cool place, preferably in cool box with a small layer of dry ice lined with a thick layer of cotton wool to prevent the samples from freezing.

Aliquoting of samples and association of the aliquots with the parent samples

The team was shown how to record the aliquot of the samples in the laboratory using *ukasimu* (<https://github.com/ilri/ukasimu>). The team was taken through operating the system.

Labelling of trays

The biorepository has adopted a way of proper labelling of the trays to facilitate easy retrieval in the liquid nitrogen freezers. The team was taken through the tray labelling process. They were given a series of tray names to be used in their work.

Storage of aliquots to the trays

After aliquoting, the team was shown how to use the system to store the aliquots in the trays; *ukasimu* guides the users on where to store the samples in the trays. Since the actual position of the samples in the trays is vital, the team was taken through recording the sample positions in the trays.

Storage of the trays in dry ice

The team was sensitized on the need to store the trays in dry ice. This effectively starts the cold chain which is to be maintained throughout the transport chain to maintain the integrity of the samples.

List of participants

Name	Email contact or Telephone No.	Sex	Country of origin	Country Classification (Developing or developed)	Institution	Designation
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