

Capacity Building Platform

for Livestock Management and Animal Health in the Global South



e-learning



e-learning tools for epidemiology
RANEMA - RANEMA-Stat - RANEMA-Flu



Aquaculture: Perspectives and Solutions

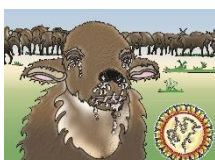


AmiquaSud

"Support for Quality Assurance (ISO/IEC 17025 Standard) for
Animal Health Laboratories in Southern Countries"



Field Data Collection and Data Management



Peste des petits ruminants - PPR



Intervention epidemiology

One Health investigation of outbreaks in Madagascar



RANEMA

Nine self-training courses (without a tutor) are available free of charge on CIRAD's e-learning (distance learning) platform:

<https://elearning.cirad.fr/>

These courses are variations of three main modules set in different geographical contexts:

RANEMA

This module is a refresher course in applied epidemiology of animal diseases. It was designed as part of a partnership between the [Veterinary School of Alfort](#) and our training team ([CIRAD-FVI](#)), with funding from the French Ministry of Foreign Affairs. RANEMA is structured around a simple scenario: trainees assume the role of veterinarians working for the veterinarian services of a virtual country named RANEMA. To carry out their duties, they must upgrade their knowledge of epidemiology by completing a set of activities. This module is available in several contextualized versions: Africa (in French and English), Asia (English), the Caribbean (French and English) and the Maghreb (French).

RANEMA-Stat

This module was designed under a partnership between [ASTRE](#) joint CIRAD-INRA research unit, [SELMET](#) research unit, and CIRAD-FVI, our training team. Through interactive lessons and simulation exercises, trainees update and acquire notions of **statistics** that will be useful to them in understanding complex epidemiology concepts that they may encounter in the other RANEMA training modules. At the end of the course, trainees will be able to implement data collection techniques and train technicians for this purpose; calculate statistical results from a database and interpret them; establish tests for the different parameters to be monitored and determine the sampling required and confidence intervals. (delivered in French).

RANEMA-Flu

Jointly designed by [UMR ASTRE](#) and [FAO](#) (AGAH / EMPRES), RANEMA-Flu is an interactive learning module on the prevention and control of Highly Pathogenic Avian Influenza H5N1. It provides information concerning the surveillance, prevention, detection, control and eradication measures that can be taken to control HPAI (delivered in French and English).

These modules were developed and validated by ASTRE epidemiologists through numerous professional training programs conducted in Africa and Asia, and in several master-level courses.

Audience

The courses are intended for veterinarians, veterinary students or technicians, and health professionals who wish to refresh their understanding of fundamental concepts related to the epidemiology of animal diseases, statistics and avian influenza.

They are open to everyone.

Course programme

- This is a self-paced course; however, it is advisable to complete the programme over a short period (one or two weeks).
- Trainees study independently and are not tutored. However, they can contact the course instructor or the platform administrator in the case of a technical problem.
- Trainees can track their progress by doing the on-line exercises, which also determine their final score.



(except for the purchase of books)

Recommended reference books

For RANEMA :

- “Applied veterinary epidemiology and the control of disease in populations” by B. Toma, B. Dufour, J.-J. Bénét, M. Sanaa, A. Shaw and F. Moutou. 2010 (3rd edition) AEEMA publications.2010 (3rd édition) AEEMA éditions.

For RANEMA-STAT :

- “Statistique épidémiologique” by T. Ancelle, Paris, ed. Maloine. 2006.

Accessing the courses

It is easier to connect to the course using Mozilla Firefox, a free and open-source web browser.



- Trainees must first connect to CIRAD's e-learning platform <http://elearning.cirad.fr> to create a profile. You then simply click on the course category of interest, in this case “Animal Epidemiology”, then “RANEMA”.

If necessary, contact: david.chavernac@cirad.fr

These training modules are available in French and English



See our other trainings : <http://formation-elevage-suds.cirad.fr>

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The organization of training courses in this field is part of its mandate.*



Aquaculture: Perspectives and Solutions



Scientific coordinator
Lionel Dabbadie (cirad – Isem)

This open-access training course is offered on the following CIRAD website:

<http://uved-formation-aquaculture.cirad.fr/>

Background

Aquaculture is a vital source of jobs, food, and economic opportunities, especially for small rural communities in southern countries. It also has become a major economic activity: one fish in two intended for human consumption is now farm-raised, and nearly 40% of world production is traded internationally. Asia currently is the world's largest exporter and the European Union the largest importer. However, given that Asia is expected to account for 70% of world fish consumption by 2030, this balance could change significantly.

In response to the issues and challenges facing the sector, many nations are currently increasing their investments, but not without encountering some resistance due to rising criticism of aquaculture. Aquaculture is blamed for its impacts on the environment and biodiversity, its social consequences, the use of unsustainable raw materials such as fishmeal, and the quality and safety of some of its products.

There are, however, innovative technologies and methods of development that make it possible to envisage a sustainable future for the sector. The aim of this course, designed by specialists from CIRAD, IFREMER and IRD, is to take stock of modern aquaculture as it is currently practiced in the world.

Contents and Objectives

This course proposes ten autonomous pedagogical units revolving around the theme "Aquaculture: Perspectives and Solutions".

The aim is to render learners able to:

- critically analyze the issues and risks of producing fish (in terms of food security, environmental impact, product quality, rural development options);
- describe the modern methods of aquaculture production (domestication, reproduction, genetic improvement, nutrition, water quality management, etc.);
- design strategies for the sustainable development of aquaculture at the scale of the farm and the territory.



e-learning

Prerequisites

Basic knowledge in biological sciences, baccalaureate level (A level).



Audience

This module could be used in master-level programmes on aquaculture, fisheries science, agronomy or agrifood, as well as BTSA/DU/L3/M1/M2 technical training programmes (managers or managers of aquaculture companies).



Topics covered

- **Topic 1** - Aquaculture in the world: history, production, specificities (tropical/temperate, freshwater/marine, species), employment, market, prospects
- **Topic 2** - Domestication and biodiversity: ichthyological diversity, domestication, introduced species and local species, criteria for choosing a new species
- **Topic 3** - Reproduction: induced reproduction, controlled reproduction, sex control
- **Topic 4** - Genetic Improvement: aquaculture application of population genetics, cytogenetics and quantitative genetics
- **Topic 5** - Nutrition: nutritional requirements of fish, natural foods and fertilization, exogenous food, use of macro-algae and insects in fish farming
- **Topic 6** - Health and quality: importance of diseases in fish farming, socio-economic impact, interactions between environment, pathogen and host, animal welfare, health risks for humans, risk control
- **Topic 7** - Systems: fish farming system concept, dynamics of country and agro-industrial systems, impact assessment
- **Topic 8** - Sustainable production: offshore systems, recirculating aquaculture systems (RAS) and multi-trophic integrated systems (including freshwater aquaponics)
- **Topic 9** - Sustainable development: environmental dimension, gender and poverty, concept of socio-ecological system
- **Topic 10** - Case studies: examples of tropical (shrimp and milkfish, Philippines) and temperate (trout, La Canourgue) aquaculture.

Possible uses

The educational content can be used in two different ways:

- As an introduction to the issues and practices of aquaculture: in this case, the video will be presented to audiences with fairly generalist profiles in the context of various training programs related to biology, agronomy or economics in which it will serve as an awareness-raising tool.
- As an introduction to specialized modules: in this case, the video will make it possible to situate the theme in the context of the issues at stake in world aquaculture. In this respect, it will serve as a guidance tool, both for learners seeking information on the various production and training sectors, and for instructors wishing to develop or enrich a lesson.



Course programme



This is a self-training course that learners can follow at their own speed; however, it is advisable to complete the programme over a short period (one or two weeks).

Each participant can work alone or supervised by an instructor.

Trainees can track their progress by doing the on-line exercises and quiz.

Conditions of admission

- This module is intended for all levels of university students in scientific training programs holding basic notions of biology and/or agronomy. It also is intended for the general public interested in aquaculture. It does not replace a basic education in biology or agronomy, but shows how theoretical notions are applied in a sector such as aquaculture.
- There is no selection for the course. It is a self-training programme.

Recommended reference books

- Aquaculture. C. Ferra, Vuibert, Paris
- Les carpes : biologie et élevage. R. Billard, QUAE Éditions, Paris
- La pisciculture tropicale. L. Dabbadie, O. Mikolasek, B. Chatain. Mémento du Forestier. QUAE Éditions, Paris



(except for the purchase of books)



Accessing the module

- Candidates can freely access the module by connecting to the website:
<http://uved-formation-aquaculture.cirad.fr/>

This digital resource is available in French with English subtitles.



Scientific contact : lionel.dabbadie@cirad.fr

See our other trainings : <http://formation-elevage-suds.cirad.fr>





Amiqua!Sud

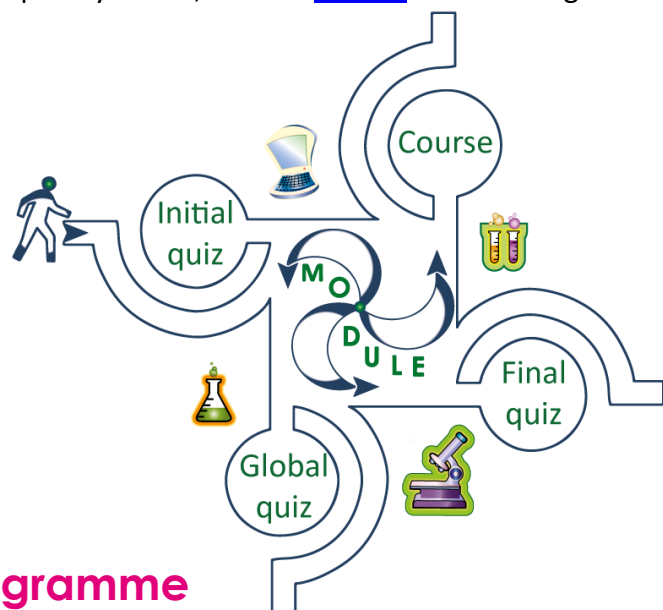
"Support for Quality Assurance (ISO/IEC 17025 Standard)
for Animal Health Laboratories in Southern Countries"

Magali Dufour (Cirad), Nicolas Keck (Adilva),
Dominique Sionneau (Cirad), Cécile Squarzoni-Diaw (Cirad)



Improving performance in testing laboratories by providing awareness-raising and training tools for quality management systems is an important challenge for partners in the global South.

This self-training module is intended to facilitate the implementation of quality assurance (ISO/IEC 17025 standard) in animal health laboratories in southern countries. Initiated by [FVI](#), it was developed by CIRAD, FVI and [ADILVA](#) with funding from FAO, CIRAD and FVI.



Objectives

- Assess the level of the quality management system (QMS) implemented in a laboratory
- When appropriate, identify the actions required to complement this QMS
- Acquire or improve knowledge and understanding of ISO/IEC 17025 v2005 requirements

Programme

This module consists of 10 independent chapters:

1. Organization, Policy and Quality Management System (QMS), Management Review
2. Purchase of services and supplies
3. Management of documents and records
4. Review of applications and contracts, Subcontracting, Client services, Claims
5. Control of work that fails to meet specifications, Improvement, Corrective actions, Preventive actions, Internal audits
6. Reports on results
7. Staff
8. Installation and ambient conditions
9. Methods, Traceability of measurement, Handling of test objects, Quality of test results
10. Equipment

Trainees can start work on the theme or activity of their choice. Each theme includes:

- an initial quiz to identify if the provisions of the QMS are in accordance with the requirements of Chapters 4 and 5 of the standard
- a course consisting of a series of educational activities explaining and detailing the requirements of the standard
- a final quiz to evaluate the knowledge acquired

A global quiz makes it possible to evaluate the initial level of the laboratory.

Audience

Quality managers or heads of technical units or laboratories familiar with the basic notions of quality assurance in the ISO/IEC 17025 v2005 standard and supporting the quality assurance of their laboratory.

Anyone interested in the quality assurance of laboratories or technical units covering animal health or food hygiene or any other structure implementing a QMS according to this standard.



Conditions of Admission

No prerequisites are required. Trainees evaluate their level through an initial quiz and choose the corresponding themes.

Access to the course is free regardless of the access mode (e-learning, online, offline mode).

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Accessing the course

It is easier to connect to the course using Mozilla Firefox, the free and open-source web browser.

The course can be taken free of charge in three different ways:



- Online on the website <http://amiqualsud.cirad.fr>
- Offline after downloading the site <http://amiqualsud.cirad.fr> and installing the module on the computer.



- To access the course, trainees must first connect to CIRAD's e-learning platform <http://elearning.cirad.fr> to create a profile. You then simply click on the the corresponding course category, in this case "Quality Assurance" and then on "Amiqualsud".

If necessary, contact: david.chavernac@cirad.fr

These training modules are available in French and English



See our other trainings : <http://formation-elevage-suds.cirad.fr>

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Field Data Collection and Data Management

David Chavernac (Cirad)



In many scientific fields (veterinary and human health, forestry, agronomy in the broad sense), data collection and management is essential for monitoring, control and observation systems.

Today, new information and communication technologies are found everywhere on the planet. Data collection and management has never been closer to the field.

In this context, it is important to (i) make the right choice of tools and methods, and (ii) acquire the knowledge enabling their implementation and use.

Objectives



Based entirely on free solutions, this training allows participants to:

- acquire general knowledge about information systems;
- create a mobile data collection application on smartphones and tablets;
- acquire the necessary knowledge to create a relational database for data management and analysis.

Content

This training is divided into 3 distinct and independent modules:

- M1 : General knowledge about information systems, data collection, new technologies
- M2 : Creating a mobile application to collect data in the field
- M3 : Using a database management system

Although the modules are independent, it is nonetheless advisable to complete M1 before proceeding to M2 and/or M3.

Audience

Anyone interested in data collection and management, whatever their activities. No IT skills are required, but it is essential to be comfortable with using a computer.

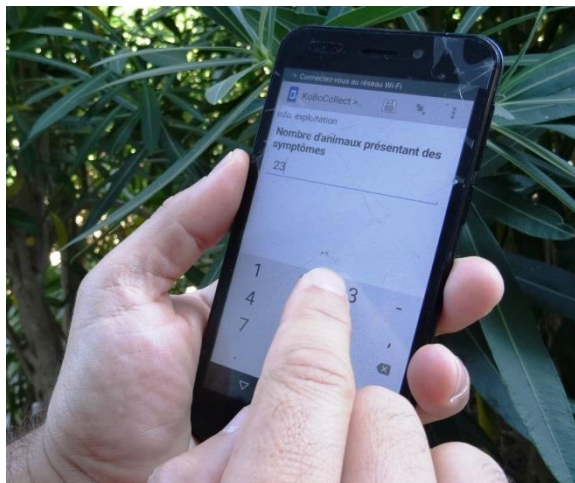
Attend the training

This training can be attended in 3 different ways:

- full autonomy mode: Totally free, this one's own pace course allows the learner to do the training as often as s/he desires.
- semi-tutored mode: Modules can be combined as desired (M1 +M2, M1+ M3, M1 + M2 + M3) and completed at one's own pace. At the end of the training, a virtual 3-hour class allows the learner to take a global knowledge test and assess the program.
- tutored mode: Module M1 is completed autonomously. Each of the other modules (M2, M3) is then organized over one week. At the beginning of each week, a virtual 30 minute class allows the learner to fix objectives and receive intermediate assignments. Throughout the week, the learner can communicate as s/he wishes with the teacher to consolidate his/her knowledge. At the end of the training, a virtual 3-hour class allows the learner to take a global knowledge test and assess the training.

A certificate of attendance and achievement is delivered at the end of the training for the semi-tutored and tutored modes.

Training fees



The fee depends on the training mode chosen:

- full autonomy: free
- semi-tutored: 70 €
- Tutored :
 - 200 € for M1+M2 or M1+M3,
 - 350 € for M1+M2+M3

If you choose the semi-tutored or tutored mode, please contact formation-emvt-fvi@cirad.fr for information on methods of payment and operating conditions. After acceptance of the quote and payment, the teacher will contact you to establish the course schedule.

Terms of use

It is recommended to use Mozilla Firefox to follow these modules.



- Log onto the CIRAD e-learning platform <http://elearning.cirad.fr> and create a learner's profile.
- Sign up for each of the modules in the course category "Information Systems / Field Data Collection and Data Management".

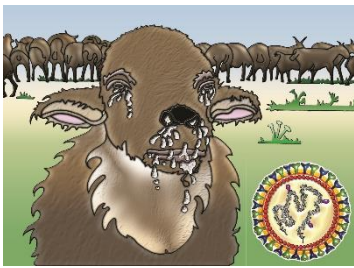
If needed, contact: david.chavernac@cirad.fr

This training module is available in French and English.



See our other trainings : <http://formation-elevage-suds.cirad.fr>

Peste des petits ruminants - PPR



Scientific directors

Renaud Lancelot, Geneviève Libeau, Adama Diallo (Cirad-Astre)
Joseph Domenech (OIE)

Pedagogical directors

Georgette Charbonnier, Cécile Squarzoni-Diaw (Cirad-Astre-FVI)

PPR is a highly contagious transboundary viral disease affecting mainly goats and sheep, as well as dromedaries. Long overlooked, it is now present in most countries of Africa, the Near and Middle East, and Asia, causing considerable losses in livestock.

Despite the existence of a highly effective vaccine, PPR continues to spread geographically. Disease-free countries of the South and countries of the North are exposed to the risk of virus incursion and disease emergence.

Globally, over one billion small ruminants are exposed to the risk of PPR. The socio-economic consequences of the disease are often dramatic. PPR has a direct impact on the food security and livelihoods of the poorest populations and hinders rural development in the countries affected.

In March 2015, the FAO and OIE officially announced the implementation of a global PPR control strategy. Training and information sharing are essential accompanying measures for the eradication of this disease.

Objectives



“Peste des petits ruminants – PPR” is a digital learning resource designed for self-learning. The contents are organized into 13 chapters. Quiz questions in each chapter enable learners to independently verify their understanding of the material.

Its purpose is to provide basic information about PPR, enabling learners to:

- explain the disease (clinical signs, hosts involved, transmission, epidemiology), understand the virus (lineages, mode of action, spread) and detect risk factors;
- catch up on field and laboratory diagnostic methods;
- provide convincing arguments supporting the use of vaccines to prevent and control the disease.

Audience

This module seeks to reach a wide audience in countries of the South which are either affected by PPR or at risk of becoming so. It is intended for animal health professionals, veterinary schools, teachers, trainers, extension agents and journalists, livestock farmers, rural development stakeholders, the staff of national laboratories, animal health and epidemiological surveillance networks and stakeholders in the sheep, goat and camel sectors.

Topics covered

- **Chapter 1** – Goats, sheep and people: the importance of small ruminant husbandry for poor populations in countries of the South (food security, economic independence, social and cultural role) and the critical need to fight devastating diseases like PPR
- **Chapter 2** – A long overlooked animal disease: presentation of essential information about PPR (Discovery, history, relationship with a disease of the past: rinderpest)
- **Chapter 3** – Unlocking the disease: the 4 clinical forms of the disease
- **Chapter 4** – Understanding the virus: identification of the pathogen. Classification, taxonomy and morphology. Evolutionary history and relationship to other viruses of the same genus (rinderpest virus, measles virus). External and internal structure (genome, viral proteins). Antigenic characteristics (1 serotype, 4 lineages). Links between lineages
- **Chapter 5** – Susceptible and/or receptive hosts. PPR epidemiological cycle
- **Chapter 6** – The virus in action: virus transmission. Risk factors. Physiological, biochemical and immunological responses of an infected host. Multiplication cycle of the virus

Un contenu structuré pour l'apprentissage



Quiz to self-assess your knowledge



- **Chapter 7** – Epidemiology of PPR: epidemiological forms of PPR: enzootic, epizootic. Factors driving the spread of PPR (livestock farming practices, animal mobility)
- **Chapter 8** – The geographic distribution of PPR: past and current geographic distribution of PPR. The factors driving the spread of PPR. The risk for Europe
- **Chapter 9** – Lineages on the move: geographic distribution of the 4 lineages of the virus before 2001. Genetic adaptation of the virus and current distribution of the lineages. Evolutionary history of the virus
- **Chapter 10** – Field diagnosis: Clinical diagnosis. Diagnosis of lesions
- **Chapter 11** – Laboratory diagnosis: Serological diagnosis. Virological diagnosis (detection of antigens and antibodies)
- **Chapter 12** – From the current preventive vaccine to a future curative vaccine: Heterologous vaccine. Homologous vaccine. Future recombinant vaccines. Future therapeutic vaccines
- **Chapter 13** – Towards the eradication of PPR: PPR's economic impact. Controlling PPR through vaccination. Factors constraining the implementation of vaccination campaigns (testimonials). Global PPR eradication strategy.

Course program



- There is no required learning path. Learners proceed at their own pace and choose how they wish to navigate through the module: in order, starting with the first chapter and continuing through to the last chapter, out of order, skipping between units steered by their individual needs, interests and knowledge.
- At the end of each chapter, the learner can choose whether or not to take the associated self-assessment quiz. The results are automatically provided as a percentage of correct answers. The learner can then choose to consult the answer key or start again to improve his or her score. Choosing not to take the quiz does not block the learner from continuing through the course.
- Full text publications provide the opportunity to deepen knowledge about particular aspects of the subject.

Total estimated duration (learning and self-assessment activities): 10 to 15 hours



Condition of admission

- There is no selection. This is a self-study course.

No prerequisites are required, although background knowledge of biology, virology, and genetics could facilitate understanding of certain chapters.



Terms of use

This resource can be accessed either:



- online on CIRAD's e-learning platform <http://elearning.cirad.fr> under "Animal Health".
- offline using a CD or USB key.
- A hard copy of the contents also is available in the form of an educational booklet which can be obtained free of charge at the following address: formation-emvt-fvi@cirad.fr



This digital resource is available in French and English.  



See our other trainings : <http://formation-elevage-suds.cirad.fr>

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Intervention epidemiology “One Health” investigation of outbreaks in Madagascar



Scientific coordinator
Cécile Squarzoni Diaw
(Cirad, UMR ASTRE)

The work of field epidemiologists is broad in scope and serves to provide rapid and concrete responses to health problems at the population level in order to inform animal health decisions. Intervention epidemiology brings together several specific activities, including epidemiological investigations, the assessment of a situation and risks, data processing...

This e-learning module, based on concrete field cases, enables professionals to review the main principles of field epidemiology by positioning the participant in situations involving analysis, investigation and decision-making.

Objectives

This self-training material aims to help participants lead an investigation effectively and improve their practices in the field.

The course aims to:

- describe the different stages of an epidemiological investigation;
- formulate hypotheses on the dissemination pathways of a pathogen;
- develop a survey questionnaire;
- propose definitions of a case and a probable case in the context of an epidemic;
- understand and manage epidemiological indicators;
- build a clinical frequency table;
- construct and interpret an epidemic curve;
- list the risky practices that have contributed to the spread of a disease in the population;
- propose prevention and control measures in the two populations (animal and human).



Programme

The case study is divided into 5 parts and covers the different possible steps of an epidemiological field investigation. The scenario is based on real events and is enriched with specific data and situations in order to meet the educational objectives of the training module. The different fields of epidemiology -- descriptive epidemiology, analytic epidemiology and operational epidemiology -- are covered.

Several learning activities are proposed during the course for participants to test their knowledge and understanding of the concepts discussed, enabling a final score to be obtained. Different resources (scientific, internet, interviews with experts on the subject...) are included in the case study to improve participants' understanding of intervention epidemiology.

This self-study module requires 2 to 4 hours of work depending on the time spent consulting additional resources.

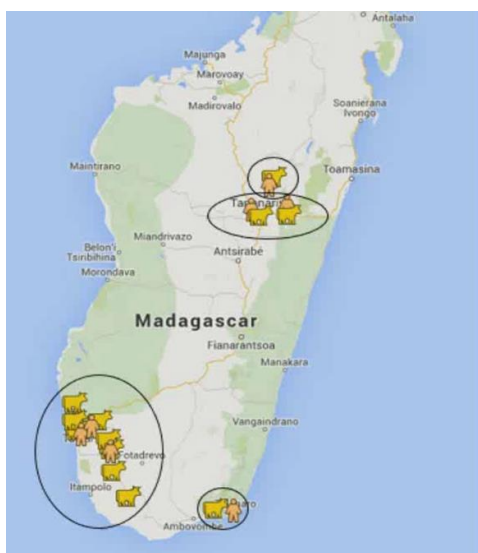
Audience

This module, which takes the form of an online case study, is intended for field workers in animal health, health technicians, veterinarians, and health staff whose responsibilities include carrying out epidemiological investigations in animal health and public health.

Training modes

The training can be undertaken in 3 different ways:

- Semi-autonomously: this module is offered during specific training sessions (master's or professional training programs) to provide access to a quality resource dedicated to field epidemiology. Access to the resource is available to participants once they have enrolled in the training program. They can then proceed through the material at their own pace and return to different sections as often as they wish.
- Semi-tutored: this resource is proposed as part of a classroom-based course to enable participants to use concepts discussed in class within a case study situation. The score obtained in this module may be integrated into the grade for the entire training program.
- As a means to assess one's knowledge: following a training course, this module can be used to test participants' knowledge and situation-based responses. The final score will be recorded on the e-learning platform by monitoring the completion of exercises.



Cost

This digital teaching resource is accessible as part of specific training (professional training, Field Epidemiologist Technical Program...) or master's program (GIMAT) with no additional fees.

It is also available at a cost of €250 on the CIRAD e-learning platform, via pre-registration and a request sent by email to formation-emvt-fvi@cirad.fr.

A certificate of participation and achievement (final score > 80%) may be issued upon request at the end of the course.

How to use

It is easier to connect to the course online using Mozilla, the free and open-source web browser.



- Participants must first connect to CIRAD's e-learning platform <http://elearning.cirad.fr> to create a profile. To access the resource, simply send an email to formation-emvt-fvi@cirad.fr to receive an identification code after registration and payment.

If necessary, contact: cecile.squarzonidiaw@cirad.fr

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