Food and Agriculture Organization of the United Nations

european commission for the control of foot-and-mouth disease

Applied post-vaccination monitoring for Foot-and-mouth And Similar Transboundary animal diseases (FAST)

Workshop report

Online. 1st-17th June 2021

European Commission for the Control of Foot-and-Mouth Disease

EuFMD's programme, tools and initiatives

FAST
Foot-and-mputh And Similar Transboudary animal diseases

Pillars
eufmd activities

Dt
eufmd digital transformation

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vlearning
eufmd virtual learning centre

microLearning
eufmd virtual learning

vlc EA
virtual learning centre for East Africa

Tom
eufmd training management system

SimExOn
simulation exercises online

KnowBank
eufmd knowledge bank

GetPrepared
emergency preparedness toolbox

RiskComms
risk communications

SQRA
a method for spatial qualitative risk analysis applied to fmd.

Pragmatist
prioritization of antigen management with international surveillance tool

EuFMDiS
european foot-and-mouth disease spread model

Impact
impact calculator

Vademos
fmd vaccine demand estimation model

GVS
global vaccine security

PQv
vaccine prequalification

PCP
progressive control pathway

PSO
pcp practicioner officers

VPP
veterinary paraprofessionals

PPP
public private partnership

Sustainable development goals, UN-SDGs. EuFMD's programme has a focus on

Together against wasting resources, think twice before printing.

Thinking of the environmental footprint

Contents

Item 1. Background

The 2019-2021 workplan of the European Commission for the Control of Foot-and-Mouth Disease (EuFMD) is aimed at assisting regional networks, risk-based surveillance and capacity building in the European neighbourhood for foot-and-mouth disease (FMD) and similar transboundary animal diseases (referred to as FAST diseases). The workplan for Pillar II countries (European neighbourhood) of the EuFMD has the objective to improve the ability of the countries in the European neighbourhood to build capacity to control FMD, promote their progress along the Progressive Control Pathway for Foot-and-Mouth Disease (PCP-FMD) and thereby reduce the risk posed by FMD in the region.
As part of the EuFMD workplan and considering request from countries in the region such as the IR of Iran, Iraq and Pakistan, the EuFMD held a regional virtual training "Applied post-vaccination monitoring for FAST diseases" for Armenia, Azerbaijan, Georgia, Iraq, Islamic Republic of Iran, Pakistan and Turkey.
The main objective of the workshop was to assist countries in the Southeast European neighbourhood (SEEN) to understand the importance of using post-vaccination monitoring (PVM) and to optimize national vaccination programmes against FAST diseases.

Item 2. The objectives of this virtual training were to:

- enable participants to better plan, implement, monitor and evaluate vaccination programmes for FAST diseases;
- provide a forum for participants to present and discuss national case studies on PVM;
- identify priority activities to improve national PVM;
- agree on needs for improved PVM implementation and roles of national veterinary services, EuFMD and regional cooperation in addressing these needs.

Item 3. Workshop information

Organizers: EuFMD
Technical coordinator: C. Pötzsch
Trainers: G. Ferrari, N. Lyons, C. van Maanen
Participating countries: Armenia, Azerbaijan, Georgia, Iraq, Islamic Republic of Iran, Pakistan and Turkey.
Participants: 5-6 participants per country including government officials working on the planning, implementation and evaluation of national vaccination programmes against FAST diseases. It was requested by EuFMD that the nominated participants had taken part in the following EuFMD training events: in depth courses on PVM (in 2017, 2018 and 2020) and/or in the EuFMD workshop "Improving surveillance and early detection of FAST diseases in the South-East European Neighbourhood" in April 2020.
For the list of participants, see **Annex III**.

Item 4. Training Approach

The training was based on the FAO/OIE Guidelines on FMD PVM and the EuFMD PVM in-depth v-learning courses. Trainees from all participating countries took part in prior EuFMD PVM in-depth v-learning courses, conducted in September 2017, March 2018 and June 2020.
The training approach consisted in plenary sessions and discussion as well as group work in virtual breakout rooms. Zoom was used as the virtual workshop platform.
Each training day started with a keynote presentation by the lead trainer on the topic of the day's session. Afterwards, two countries presented activities, achievements and potential gaps related to the daily topics, followed by plenary discussion.
During group work in virtual breakout rooms, the country groups elaborated topics of planning, implementation, monitoring and evaluation, etc. of national PVM activities.
The groups presented their results in plenary followed by discussion.

Item 5. Pre-training needs assessment

An applied PVM training was requested by a range of countries in the SEEN region, i.e. Pakistan, IR of Iran, and Iraq. Before the training, a meeting was held between one of the trainers, G. Ferrari, the course coordinator C. Potzsch and national focal points of the participating countries. During the meeting, the countries' priorities were identified to adjust the course content. It was agreed to focus on the four main chapters of the FAO/OIE Guidelines on FMD PVM and devote one training day per chapter.

Item 6. Details of the Sessions and training days

I. Session One: Attributes of FAST vaccines

Opening

S. Metwally and F. Rosso opened the workshop on behalf of FAO and EuFMD respectively. They stated the importance of PVM in WestEurasia and SEEN countries. Reference was made to the FAO/OIE PVM Guidelines as a basis for different PVM studies. C. Potzsch reviewed the agenda (**Annex I**) and the training objectives.

Lead trainer: C. van Maanen

Summary of Session One

Module 1 addressed issues and challenges regarding attributes of FAST vaccines.

In the presentation, the characteristics of FAST vaccines were discussed, particularly FMD vaccines, explaining more in detail parameters such as innocuity, purification from non-structural proteins, efficacy, vaccine matching and vaccine strain selection. The requirements during manufacturing and for

registration of vaccines were discussed and the possibilities for independent (re)testing. Finally, the critical aspects of tender procedures, checklists for vaccine selection and pre-qualification procedures were discussed.

Two countries were invited to present based on a template provided: Georgia and IR Iran. Both countries delivered a very informative presentation regarding the FAST vaccines used, the strain composition of the FMD vaccines used, public versus private responsibilities, tendering procedures, FAST vaccines problems and priorities.

Summaries of the breakout groups: the assignment was "Your country is about to purchase a certain amount of FMD vaccine and you have been assigned to prepare a full dossier for the tender procedures. Please describe the specifications that should be included in the tender" was well received by the countries. Most countries described specifically which strains should be included, required proof of purification from non-structural proteins, a potency of at least 6 PD50 per dose, safety, innocuity, an acceptable shelf life, proof of cold chain conditions kept within certain limits during transport etc. However, apparently the information provided in the dossier is not always confirmed during re-testing of the vaccine in for example small scale immunogenicity studies, as was shown in the second session.

II. Session Two: Vaccination programme objectives, vaccine distribution, vaccination schedule and vaccine coverage

Lead trainer: G. Ferrari

Summary of Session Two

Module 2 addressed issues and challenges to monitor the implementation of a vaccination program: from the time vaccine is available until it is delivered to the vaccinators and injected into the animals.

The keynote presentation illustrated a true example on how a FMD vaccination program was implemented in one country and specific reference was made to which monitoring tools have been used, namely: (i) the vaccination card; and (ii) a registration book of incoming and outgoing vaccine from the local distribution centres (where the vaccine is consigned to the vaccinators). The objective of the presentation was mainly to illustrate how the use of such monitoring tools can assist in formulating specific indicators such as vaccine coverage, rate of dropouts (animals that failed to receive a booster dose of vaccine) and performance indicators at the distribution centre level (such as rate of delivery and rate of utilization).

Two countries, Iraq and Armenia, presented, based on a template provided, their national experience with vaccination programme objectives, vaccine distribution, vaccination schedule and vaccine coverage.

Summaries of the breakout groups, including country presentations: the assignment provided aimed at creating a distinction between the different segments of the population (total population vs target

population; target population vs eligible numbers to be vaccinated) and to possibly better see the correct use of the denominators when estimating coverages. This part of the assignment was well received by all countries.

The second part of the assignment aimed at obtaining a description of the procedures and monitoring tools in place to monitor the implementation of a vaccination program. Some countries showed a rather well-advanced system. Some countries had included also the results of serological investigations and this was much appreciated although this was not the specific topic of the discussion.

III. Session Three: Evaluation of immune response to vaccination

Lead trainer: G. Ferrari

Summary of Session Three

Module 3 addressed immunogenicity studies broadly divided into: (i) small scale studies to evaluate the immune response in vaccinated animals; and (ii) evaluate immunity at general population level (which will include both vaccinated and unvaccinated animals).

The presentation illustrated the approaches proposed in the PVM guidelines for implementing such studies and the methodological implications behind the design of such studies. Emphasis was given to evaluate the immune response in vaccinated animals in order to gain a better understanding of what might be expected at population level in terms of immunity and possible protection conferred by the vaccine/s used.

Small scale immunogenicity studies are in general simpler to be implemented if compared with studies aiming at evaluating immunity at population level which involves the design of complex surveys.

Two countries were invited to present based on a template provided: Azerbaijan and Georgia.

It is of note that both countries have illustrated how the implementation of small-scale immunogenicity studies has provided indications to veterinary authorities that the immune response obtained with the FMD vaccine used was to be considered unsatisfactory. This information was then utilized to make the necessary changes to the tender procedures in order to ensure that the vaccine to be purchased met the requirements of a good quality vaccine.

The breakout groups discussions have highlighted the importance of such studies although sometimes financial constraints may represent an impediment.

Some countries with endemic FMD have represented the challenges in implementing small scale immunogenicity studies because of the requirement that animals should remain free from natural infection throughout the duration of the field study.

IV. Session Four: Monitoring the impact of vaccination and other control measures

Lead trainer: N. Lyons

Summary of Session Four

Session 4 of the workshop covered monitoring the impact of vaccination, in line with chapter 4 of the PVM guidelines. The keynote presentation covered the following major points:

- What is meant by impact of vaccination at the population level, defined as the long term effect on morbidity;
- The difference between vaccine efficacy (relative reduction of cases under trial conditions) and effectiveness (under programme conditions);
- The limitations of usual efficacy studies done for FAST vaccines;
- Study designs for estimating vaccine effectiveness in the field;
- Approach for evaluating vaccines in high coverage areas;
- Investigating and monitoring vaccination failures.

This was followed by some discussion with questions about the implementation of effectiveness studies using available data, and evaluating reactive vaccination within affected areas or farms.

Following this presentation, some questions were asked in Mentimeter:

1. In your country, are regulations for vaccine efficacy testing the same as those specified in the OIE terrestrial manual for foot-and-mouth disease?
2. For each FAST disease, what is the maximum acceptable incidence on a vaccinated farm using the best available vaccine? If you don't know, leave blank.
3. How many months after the start of an outbreak in a farm (or village) should the investigation be carried out to quantify the overall incidence?

Overall, in excess of 20 participants answered the questions posed. On the whole, most answered that the national efficacy requirements were as stated in the OIE terrestrial manual.

The answers to questions 2 and 3 are in the following table:

TABLE 1

FAST disease	Mean maximum acceptable incidence on a vaccinated farm (%)	Mean time of investigation after start of outbreak to quantify incidence (months)
BEF	7.6	1.1
FMD	17.5	1.8
LSD	16.5	2
PPR	2.4	1.8
RVF	2.7	0.3
SGP	17.6	2.5

Country presentations were delivered from Pakistan and Turkey. The highlights of these presentations were:

Pakistan

- Plans to have a zone in Bahawalpur division where mass vaccination is underway. Otherwise, vaccination in Pakistan is reactive only covering large ruminants (cattle and buffalo) and paid by the Punjab livestock department;
- Periodic evaluation takes place by the FMD control project;
- Efficacy study done previously in Cholistan;
- Challenges for doing vaccine studies include a lack of ID system, problems taking sera, and getting NSP negative animals;
- Planning to do SSIS and “population wise efficacy studies”;
- Vaccine failures are investigated.

Turkey

- Vaccination strategies differ in Thrace and Anatolia;
- FMD vaccination is paid by farmer with some government compensation;
- Field vets enter data directly into the VETBIS system. Reports are generated at least twice a year;
- Vaccine effectiveness studies were last done around 10 years ago with none since, and no plans to do more. It is difficult to find appropriate epi units due to high vaccination coverage;
- There is a clear system in place for investigating vaccine failures.

This was followed by an exercise with countries divided into breakout rooms. Countries were asked to present how they evaluate the impact of their FMD control programme in their country. A template presentation was provided with the following questions:

- Summarize the current AIM(s) of your FMD control strategy;

- What indicators do you currently measure to monitor the IMPACT of your FMD control programme? This should be linked to the aims of your control strategy in the previous slide.
- What additional indicators do you want to measure?
- What problems do you have in measuring them?
- How could this be overcome?

Presentations were delivered from Armenia, Azerbaijan, Georgia, IR Iran and Iraq. There was some confusion over what was meant by an indicator with some countries tending to identify gaps in their capacity instead.

Item 7. Training material and presentations

All training materials and presentations were shared with participants and are available at the EuFMD sharepoint.

Item 8. Communication

Two communication products were produced covering the workshop:

- A newsletter was shared at the end of the course.
- Two short video-interviews, in which participants from all countries explained the relevant topics of applied PVM for their countries and how they are going to implement what they have learned in their countries:
- 1) Part I;
- 2) Part II.

Item 9. Impact assessment and post-course survey

See **Annex II** for details.

Item 10. Course attendance and certificates

36 out of 45 attendees participated in at least three of the four training course sessions and received course certificates.

Item 11. Conclusions, recommendations and action plan

During the workshop, priority activities to improve national PVM were identified. The roles of national veterinary services, the EuFMD and regional cooperation in addressing country needs were agreed.

Conclusions

- Most countries have detailed tender procedures in place;
- Most countries do not have the possibility for retesting of vaccines regarding important aspects like safety, innocuity, efficacy;
- In Turkey and the Trans Caucasus countries, small scale immunogenicity studies have already been shown to play an important role in the interaction between manufacturers and critical clients and should be more widely implemented;
- Vaccine effectiveness studies are potentially powerful ways of assessing if FAST disease control programmes are working.

Recommendations

1. Vaccine pre-qualification procedures are considered relevant and are welcomed by the participating countries.
2. The regional GVA group could play an important role in the interaction with manufacturers (availability of batch release sera) and the pre-qualification working group.
3. Outbreaks of FAST diseases need to be followed up so vaccines can be evaluated. To investigate potential failures and quantify incidence. Outbreaks do not necessarily have to be clinical cases and can be FMD NSP positive animals. Indicators need to be defined and targets put in place.
4. Vaccine effectiveness studies need to be encouraged in all SEEN countries; protocols need to be developed based on the vaccination aims and available data.
5. Design of an implementation strategy should be done alongside the design of the monitoring and evaluation, including indicators, targets, and how data will be collected. This should cover vaccine failures and incidence on affected farms.
6. Individual country meetings might be productive in defining the monitoring and evaluation approach to vaccination.

Action Plan

What	*When*
Participating countries to	
Discuss the results of the PVM training and agree on PVM activities in the region, esp. on small scale immunogenicity studies; Identify the need for individual county support; Invite vaccine manufacturers to GVA meetings if deemed important.	At the next GVA meeting, planned in November At GVA meetings, as agreed
EuFMD to	
Assist IR of Iran in the design and implementation of the proposal on public-private partnerships to conduct small scale immunogenicity studies in the dairy sector.	First meeting held on 23 August 2021

Appendices

Agenda

Training Impact

List of Participants

Annex I: **Agenda**

Session One – Tuesday, 1 June 2021 – zoom link: here – Passcode: 99337387 **Attributes of FAST vaccines**		
Start time: 10:00 am CEST/Rome		
Duration	Topic	Lead
10 min	Welcome to the course Introduction and course objectives	S. Metwally (FAO) and F. Rosso (EuFMD) C. Pötzsch (EuFMD)
20 min	Key note presentation	C. van Maanen (EuFMD)
30 min	Country presentations (2x 15 min)	(Georgia, IR Iran)
15 min	Discussion	(all)
10 min	BREAK	
40 min	Group work (breakout rooms)	(trainers)
40 min	Group presentations and discussion	(groups)
15 min	Plenary discussion and closing	C. van Maanen
Session Two – Wednesday, 2 June 2021 – zoom link: here – Passcode: 55844948 **Vaccination programme objectives, vaccine distribution, vaccination schedule and vaccine coverage**		
Start time: 10:00 am CEST/Rome		
Duration	Topic	Lead
30 min	Summary of day 1 and welcome to day 2 Key note presentation	G. Ferrari (IZSLT)
30 min	Country presentations (2x 15 min)	(Iraq, Armenia)
15 min	Discussion	(all)
10 min	BREAK	
35 min	Group work (breakout rooms)	(trainers)
35 min	Group presentations and discussion	(groups)
15 min	Plenary discussion	G. Ferrari (IZSLT)
10 min	Introduction to country assignments Closing	G. Ferrari (IZSLT)
Session Three – Monday, 14 June 2021 – zoom link: here – Passcode: 66401968 **Evaluation of immune response to vaccination**		
Start time: 10:00 am CEST/Rome		
Duration	Topic	Lead
30 min	Summary of day 2 and welcome to day 3 Key note presentation	G. Ferrari (IZSLT)
30 min	Country presentations (2x 15 min)	(Georgia, Azerbaijan)
15 min	Discussion	(all)
10 min	BREAK	
40 min	Group work (breakout rooms)	(trainers)
40 min	Group presentations and discussion	(groups)
15 min	Plenary discussion and closing	G. Ferrari (IZSLT)

Session Four – Tuesday, 17 June 2021 – zoom link: here – Passcode: 94636068 **Monitoring the impact of vaccination and other control measures**		
Start time: 10:00 am CEST/Rome		
Duration	Topic	Lead
30 min	Summary of day 3 and welcome to day 4 Key note presentation	N. Lyons (EuFMD)
30 min	Country presentations (2x 15 min)	(Turkey, Pakistan)
15 min	Discussion	(all)
20 min	Feedback on country assignment	(trainers)
10 min	BREAK	
35 min	Group work (breakout rooms)	(trainers)
35 min	Group presentations and discussion	(groups)
10 min	Plenary discussion	N. Lyons (EuFMD)
10 min	Action plan and next steps Closing	C. Pötzsch (EuFMD)

Annex II: **Training impact**

The first stage of the training impact assessment included an evaluation of the learning participants of the workshop. Following attendance of the sessions, all the participants having attended at least 3 out of 4 sessions have been considered proficient in the indicated learning objectives and provided a certificate.

Learning Objectives

LEARNING NEEDS	LEARNING ASSESSMENT	UPDATE
• enable participants to better plan, implement, monitor and evaluate vaccination programmes for FAST diseases; • provide a forum for participants to present and discuss national case studies on PVM; • identify priority activities to improve national PVM; • agree on needs for improved PVM implementation and roles of national veterinary services, EuFMD and regional cooperation in addressing these needs.	Participants were provided a certificate and considered the workshop as passed upon attendance of 3 out of 4 sessions.	See participant list for final numbers

Participants will be expected to be involved in follow-up actions to apply what they learnt in the upcoming months. Application will be measured by EuFMD via feedback received from the Impact survey that will be provided to all of them. The objective will be to identify in which degree they benefitted from EuFMD's course and how much of the learning they applied.

Application needs

APPLICATION NEEDS	APPLICATION ASSESSMENT	UPDATE
Participants have been involved in the preparation of PVM related activities.	This will be evaluated in the impact survey to be provided by EuFMD Learning team in 12 months timeframe	

The ultimate goal of the workshop will be measure by meeting the actions indicated in the action plans at the next GVA meeting.

Strategic needs

STRATEGIC NEEDS	IMPACT ASSESSMENT	UPDATE
Discuss the results of the PVM training and agree on PVM activities in the region, esp. on small scale immunogenicity studies. Identify the need for individual county support. Invite vaccine manufacturers to GVA meetings if deemed important at the next GVA meeting, planned in November.	To be identified following next GVA meeting	

Annex III: **List of Participants**

Country	Name	Surname	Position	Institution
Armenia	Perch	Tumanyan	Head of the Reference Laboratory for Especially Dangerous Pathogens	Republican Veterinary Sanitary and Phyto-Sanitary Centre for Laboratory Services (SNCO)
Armenia	Hrant	Danelyan	Head of the Department of Serology and Molecular Biology of the Reference Laboratory for Especially Dangerous Pathogens	SNCO
Armenia	Marianna	Khachatryan	Chief veterinarian of the veterinary division	Food Safety Department of the Ministry of Agriculture (MoE)
Armenia	Satenik	Kharatyan	Head of the department of diagnosis of animal infectious diseases and the quality control of the biologics	Scientific Center for Risks Assessment and Analysis in Food Safety Area (SCRAAFSA) - SNCO
Armenia	Artur	Melikyan	Deputy head of Veterinary department	Food Safety Inspection Body of the Republic of Armenia
Iraq	Mazen	Mahdi Naji	C. Vet. Lab	Government officials
Iraq	Ali	Muhmoud Alkhalili	Epidemiological Department	Ministry of Agriculture Veterinary Directorate- OIE focal point for aquatic animal in Iraq
Iraq	Eman Saleh	Sryan	Vet. Hosp. Laboratory	Veterinary Hospital in Baghdad
Iraq	Majid	Hameed Mohammed	Epidemiological Unit	Veterinary Hospital in Baghdad
Iraq	Hudhaifa Abdulmahdi	Hadi	Epidemiological Department	Government officials
Iraq	Hasan	Falah	Student	
Azerbaijan	Jeyhun	Aliyev	Head of Risk management of animal health and crisis situation sector of the Animal health department	Food Safety Agency of the Republic of Azerbaijan (AFSI)
Azerbaijan	Chichak	Suleymanova	Lead Specialist in the Animal Health sector of the Scientific Research and Risk Assessment Department	Azerbaijan Food Safety Institute
Azerbaijan	Fakhranda	Alizada	Specialist in the Animal Health sector of the Scientific Research and Risk Assessment Department	Azerbaijan Food Safety Institute
Azerbaijan	Jala	İsgandarli	Specialist in the Animal Health sector of the Scientific Research and Risk Assessment Department	Azerbaijan Food Safety Institute
Azerbaijan	Tamilla	Aliyeva	Deputy Chairman, FMD Focal Point FMD Focal Point	AFSI

Georgia	Tengiz	Chaligava	Deputy head of EDP division of veterinary department	National Food Agency Ministry of Agriculture of Georgia (NFA)
Georgia	Tornike	Khargaladze	Chief specialist of EDP division of veterinary department	NFA
Georgia	Natia	Kartskhia	Chief specialist of EDP division of veterinary department	NFA
Georgia	Tsira	Napetvaridze	Chief specialist of EDP division of veterinary department	NFA
Georgia	Irakli	Tsikhelashvili	Chief specialist of veterinary drag registration division	NFA
IR Iran	Amir	Javadi	Head of viral and prion diseases section/EuFMD contact point	Iran Veterinary Organization (IVO)
IR Iran	Reza	Shahriari	Fars province's IVO	IVO
IR Iran	Javad	Emami	West Azerbaijan province's IVO	IVO
IR Iran	Kamran	Mirzaie	Epidemiologist/ FMD national committee member	IVO
IR Iran	Zahra	Boluki	Consultant of Iran Veterinary council	University of Tehran
IR Iran	Mohamadali	Eliasi	Staff of National reference laboratory	IVO
FAO Pakistan	Muhammad	Afzal	FMD Management Specialist	FAO Pakistan Office
Pakistan	Zahida	Fatima	Managing Director, Animal Sciences Division,	Pakistan Agricultural Research Council (PARC)
Pakistan	Shumaila	Manzoor	Scientific Officer	National Veterinary Laboratory (NVL), National Agricultural Research Center (NARC), Islamabad
Pakistan	Aman	Ullah	Principle Scientific Officer, Animal Health Program	Program Leader, Animal Health Program, Animal Sciences Institute, NARC Islamabad
Pakistan	Hamid	Irshad	Principle Scientific Officer, Animal Health Program	NARC, Islamabad
Pakistan	Muhammad Athar	Abbas	Senior Scientific Officer, NRLPD, NARC, Islamabad Senior Scientific Officer (NRLPD) Fellow (Fleming Fund AMR Surveillance-AH Pakistan) Focal Person-AMR (PARC) In charge Zoonotic Disease Surveillance Unit Administrator (One Health Hub) Animal Sciences Institute	NRLPD, NARC, Islamabad
Pakistan	Suhail	Azmat	Deputy Director Livestock, Bahawalpur, South Punjab	Bahawalpur, South Punjab
Pakistan	Amir	Shahab	Veterinary Officer (Health)	Livestock & Dairy Development Department, Khyber Pakhtunkhwan

Turkey	Can	Cokcaliskan	Type Thai. and Mol. Epid. Veterinarian-Lab Chief	FMD Institute
Turkey	Beyhan	Sareyyüpoğlu	Serology Veterinarian-Lab Chief	FMD Institute, Turkey
Turkey	Adil	Adiguzel	Animal Health Officer at Animal Health and Quarantine Department	General Directorate for Food and Control (GDFC), Turkey
Turkey	Anil	Demeli	Vet. Physician at Animal Health and Quarantine Department	GDFC, Turkey
Turkey	Sabri	Hacıoğlu	Head of Virological Research and Diagnostic Laboratory Wildlife Department	Veterinary Control Central Research Institute Ankara, Turkey
Turkey	Serdar	Uzar	Laboratory Chief, Veterinary Virology and Viral Vaccines Production	Ministry of Food, Agriculture and Livestock, Pendik Veterinary Control Institute, İstanbul, Turkey
Turkey	Sena	İnel Turgut	Veterinarian	Sap Institute/ANKARA Ministry of Agriculture and Forestry
EuFMD	Fabrizio	Rosso	Deputy Executive Secretary, Animal Health Officer, NSAH	EuFMD
EuFMD	Marcello	Nardi	Chief Learning Specialist	EuFMD
Tech Coordinator	Carsten	Pötzsch	FMD Laboratory and Epidemio-Surveillance –Technical specialist; Component Manager	EuFMD
Trainer	Nicholas	Lyons	FMD Technical Specialist Risk Management	EuFMD
Trainer	Kees	Van Maanen	FMD Laboratory and Epidemio-Surveillance –Technical specialist	EuFMD
Trainer	Giancarlo	Ferrari	Expert	Istituto Zooprofilattico Sperimentale del Lazio e della Toscana (IZSLT)
EuFMD	Bouda	Vosough Ahmadi	Risk management economist (Technical Specialist)	EuFMD
EuFMD	Silvia	Epps	Programme Specialist	EuFMD
EuFMD	Filippo	Pedullá	Programme Specialist	EuFMD
EuFMD	Benedetta	Arangio Ruiz	Ops Support	EuFMD
FAO	Samia	Metwally	Senior Animal Health Officer, Animal Production and Health Division (NSAH)	FAO HQ
FAO	Shija	Jacob	Animal Health Specialist, NSAH	FAO HQ
OIE	Ghazi	Yehia	Regional Representative	OIE RR for the Middle East
OIE	Jean	Perchet	Regional Representation Technical advisor	OIE in Moscow

EuFMD Committees

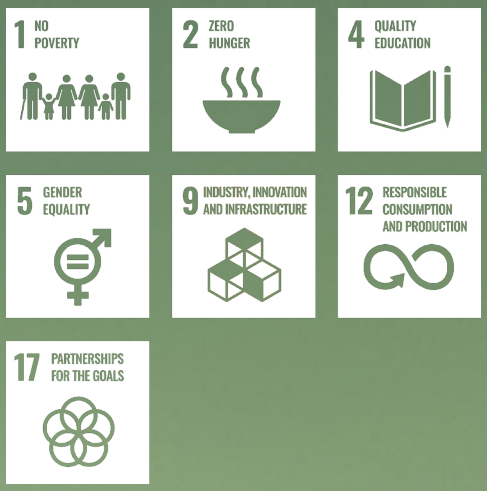
Executive Committee, Standing Technical Committee (STC), Special Committee for Surveillance and Applied Research (SCSAR), Special Committee on Biorisk Management (SCBRM), Tripartite Groups.

Hold-FAST tools

AESOP. Assured emergency supply options; **EuFMDiS**, FMD spread model; **GET PREPARED** toolbox. Emergency preparedness; **GVS**. Global Vaccine Security; **Impact Risk Calculator**; **Online Simulation Exercises**; **Outbreak Investigation application**; **Pragmatist**. Prioritization of antigen management with international surveillance management tool; **PCP-FMD**. Progressive Control Pathway for foot-and-mouth disease. **PCP-Support Officers**; **SAT**. PCP Self-Assessment Tool; **RTT**. Real Time Training; **SMS Disease reporting**; **SQRA toolkit**. A method for spatial qualitative risk analysis applied to FMD; **Telegram**; **TOM**. EuFMD training management system; **Global Monthly reports**; **VADEMOS**. Vaccine Demand Estimation Model; **VLC**. Virtual Learning Center. Microlearning.

United Nations Sustainable Development Goals (UN-SDGs)

EuFMD's programme has a main focus on



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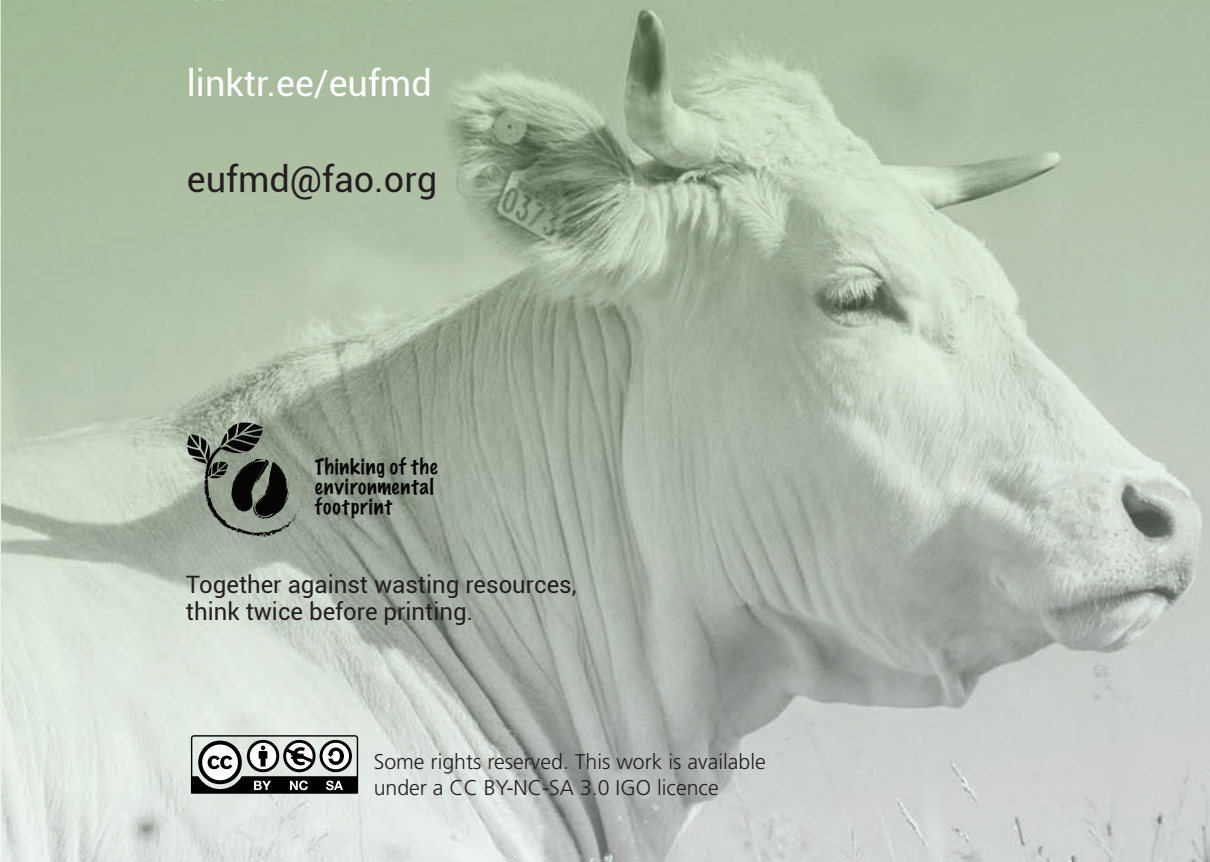

Thinking of the environmental footprint

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