



Organisation des Nations Unies
pour l'alimentation
et l'agriculture

Foot and Mouth Disease Outbreaks in North Africa: Towards a regional strategy based on lessons learnt

Workshop
Rabat (Morocco), 24-26 August 2015



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Component 2.3 of **EuFMD** workplan: programme for supporting REMESA actions on FMD control

Executive summary

In 2014, North Africa faced an epidemic of Foot and Mouth Disease which requested significant efforts by the countries involved (Algeria, Tunisia) or at risk (Morocco) in terms of human and financial resources. Despite the control measures implemented, extensive formal and informal cross-border movements of people, animals and products are present in the region and require a regional harmonization of prevention and control activities. At the same time, the long-term success of the prevention and control measures is threatened by a lack of financial resources and an unstable political and security environment.

EuFMD is providing support to North African countries as part of its strategic plan to support REMESA (Mediterranean Animal Health Network) to strengthen their capacities for prevention and control of FMD. During the REMESA Joint Permanent Committee (JPC) meeting in March 2015 the organization of a regional meeting was proposed and approved with the following objectives:

- Identification of priority actions to reduce the risk of repeated introductions and to reduce the impact of FMD once present,
- Identification of best practices and lessons learnt during the implementation of prevention and control measures in 2014 and 2015, and
- Formulation of recommendations for a regional FMD strategy.

This workshop was organized in Rabat, Morocco from 24-26 August 2015. The workshop hosted participants from Morocco, Algeria, Tunisia and Mauritania. Furthermore, an observer from Egypt participated in the workshop, as well as observers from FAO, OIE and REMESA presidency.

Recommendations

During the workshop, the control measures that have been put in place in North Africa were analysed and discussed, as well as the risk pathways for introduction and spread of FMD.

Below is a summary of the proposed recommendations that will allow identifying the key aspects towards a regional strategy.

Improvement of the prevention

- Strengthening of cross-border animal movement control regarding illegal introduction of animals and products.
- Continuation of animal identification, tracking and tracing of their movements.
- Mapping of animal movements, knowledge at regional level of transportation routes based on local conditions.
- Strengthening of passive surveillance
- Targeting active surveillance: high risk areas and periods
- Harmonization or implementation of a regional surveillance strategy
- Coordination by a regional reference laboratory
- Strengthening cooperation between stakeholders, awareness and training

Strengthening of FMD control

- Control and restriction of animal movements ... and effective closure of livestock markets during outbreaks, certification,....
- Strengthening of biosecurity measures
- Cost-benefit analysis: preliminary studies to identify epidemiological and economic risk factors
- Preparation of a regional control plan → control programs with support of/collaboration with experienced countries, international organization and following PCP

- Implementation of sanitary measures in and around outbreak farms (confiscation and isolation of infected animals, stamping out, disinfection)
- Financial support for necessary personal equipment (PPE) and culling facilities
- Financial support for compensation
- Establishing a vaccine/antigen bank at regional level with regional and international support (financial and technical)
- Preventive vaccination: Establishment of a vaccine supply taking into account the regional animal health developments, securing necessary orders.
- Emergency vaccination: mobilization and access to vaccines in case of emergency
- Strengthening of epidemiological surveillance: conducting representative serological surveys on the effectiveness of vaccination and viral circulation
- Development of tools to assist the design, implementation and evaluation of vaccination campaigns
- Consideration of strengthening the laboratory capacities to manage the crisis

Strengthening of communication

- Strengthening coordination among all partners
- Establishment of a surveillance or communication committee (national or regional)
- Creation of opportunities where professionals can exchange information
- Activation of the REMESA website to exchange animal health information
- Preparation of awareness tools and their implementation for each target audience
- Harmonization of technical communication media (support and technical expertise at national, regional and international level)
- Creating awareness among actors during peace time
- Improving feedback for experience

Improving the mobilization of human and financial resources

- Cost-benefit analysis of control measures to justify resources and required financial means
- Harmonization of regulatory framework for measures and resources, regional and international support in the preparation of regulations
- Good structure of veterinary services, administrative and financial autonomy
- Establishment of a regional animal disease fund (national/regional)

1. Background

Foot and mouth disease (FMD) is a viral disease affecting cloven-hoofed animals with a severe economic impact. Economic losses do not only occur as a result of clinical disease of infected animals, but also as a result of the control measures that are taken in response to outbreaks. Economic losses are further aggravated due to national and international trade restrictions that are put in place to protect unaffected markets from introduction of the virus.

In North Africa, Morocco, Algeria and Tunisia did not record any FMD outbreaks from 1999 until 2014 (Morocco has no outbreaks to date). In May 2012, all three countries were recognized as having an endorsed FMD control program by the World Organization for Animal Health (OIE), which was an important step on the pathway towards official recognition of their FMD free status. As part of the routine FMD prevention activities, Algeria and Tunisia implemented annual vaccination campaigns for cattle, while Morocco had ceased all vaccinations in 2007.

Unfortunately, in April 2014 Tunisia notified the OIE about the first FMD outbreaks in the country since 1999. In July 2014, Algeria also reported outbreaks of FMD. Following the first reports, disease spread quickly in both countries. In response to the outbreaks, Tunisia and Algeria activated their national FMD emergency action plans and implemented several control measures including

emergency vaccination to stop the spread of infection. However, in 2015 Algeria reported new FMD outbreaks in previously unaffected regions. Until today, Morocco remains unaffected by FMD, but as part of its strengthened prevention activities, it has reinitiated a vaccination campaign for cattle.

The prevention and control measures put in place by the three countries have already required significant human and financial resources, despite these measures, additional efforts are still needed to achieve success. In particular, the extensive formal and informal cross-border movements of people, animals and products in the region require a regional harmonization of prevention and control activities. At the same time, the long-term success of the prevention and control measures is threatened by a lack of financial resources and an unstable political and security environment.

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This workshop was organized in Rabat, Morocco from 24-26 August 2015. The workshop hosted participants from Morocco, Algeria, Tunisia and Mauritania¹. Furthermore, an observer from Egypt participated in the workshop, as well as observers from FAO, OIE and REMESA. The agenda and a complete list of participants and observers are presented in Annex 1 and 2 respectively.

2. Methodology

The workshop started with brief presentations by all participating countries about the 2014 outbreak and their current FMD situation. The themes of the subsequent sessions followed the different steps in FMD prevention and control:

1. Entry of FMD infection
2. Silent spread period
3. Control of the epidemic during the first month post-outbreak
4. The long tail of virus circulation
5. Recovery

During these five sessions, key driving factors of the different steps were identified through discussions among the participants. Subsequently, the relevant prevention and control measures put in place by the respective countries were discussed and any problems or difficulties encountered were highlighted. Then, the participants formulated the lessons learnt based on their recent experiences with FMD prevention and control.

During the sixth session, the participants summarized key control measures, problems and difficulties as well as lessons learnt across all steps. They also differentiated between control measures, problems and difficulties and lessons learnt that were common to all participating countries and those that were specific to countries.

¹ Participants from Libya had also been invited but they were not able to participate due to immigration problems.

During the seventh session, the participants tried to formulate their recommendations for future FMD strategy dedicated for their country and for regional program. In addition, they indicated the type of support required for the implementation of the recommendations.

Sessions one through six were organized as parallel sessions, each of them supported by two moderators. Conclusions of the discussions were presented during plenary sessions at the end of each session. During session seven, participants were first given time to prepare their recommendations with their national colleagues, after which the national results were presented during a plenary session.

3. Lessons learnt during FMD prevention and control in the North African region

3.1 Animal movement control

Across all stages of the FMD outbreaks and across all countries, control of animal movements has been a major hurdle. First, the absence of reliable **animal identification systems** makes it very difficult to trace movements. Morocco has implemented animal identification for bovines which allows tracing the movement of animals, and has launched an operation for the identification of small ruminants on the East region, but small ruminants remain unidentified in majority of the region.

Second, some **cross-border movements** of herds are unregulated. Cross-border movements can be for short distances to reach common grazing grounds or water points or be long distance such as for transhumance or for trade purposes, notably with the approach of sacrifice Aid. In either case, herds and animals that are crossing borders escape national veterinary supervision for a certain period of time and their uncontrolled re-entry into the country poses a risk for (re-)introduction of FMD virus. Third, there is a **poor understanding** of cross-border movements both in time and in space. This further complicates the implementation of timely and adequate prevention and control measures. Finally, in several countries **implementation of movement control** is not done by the veterinary service but by national security or inspection agencies, which means that the relevant inspectors need to be trained on FMD-related inspection actions. Furthermore, due to general security problems in the region, current priorities of the national security or inspection agencies are placed on other areas. As a result, many animal movements occur without inspection facilitating both illegal movements and movements of clinically affected animals.

3.2 Epidemiology and surveillance

The current distribution of FMD field strains in the North African region is known. However, more targeted actions are necessary in endemic countries, such as Mauritania and Libya, to provide a better picture on the circulation of different FMD strains.

Several serological surveys conducted in Morocco, Algeria and Tunisia seem to indicate that FMD is not present or circulating at a very low level only, however, the **statistical confidence** of the surveys may not be sufficient to provide a reliable overview of the true situation. This is further complicated by the fact that the countries have large populations of small ruminants which typically demonstrate weaker clinical signs, thereby reducing the ability to rely on passive, clinical surveillance. Further, surveillance activities are currently designed on a national level, however, the epidemiology of FMD in North Africa has a strong **regional component** as a result of significant regional animal movements and shared pastures and water points that go across borders. This regional dynamics has not yet been accounted for in the design of the survey activities, and as a result current surveys are not yet able to properly capture and describe the situation of FMD in the region.

3.3 Communication

Rapid exchange of information between countries is essential to quickly respond to changing disease dynamics. If **communication channels** have not been established previously during “peace time”,

then these channels need to be built up quickly under high pressure once a crisis starts. On a central level, information exchange mechanisms have been established between Morocco, Algeria and Tunisia, but they still need to be consolidated during peace time. This can include the institutionalization of information exchange mechanisms, but also involves the possibility to exchange information on a technical level or at a local cross-border level.

3.4 Vaccination

Algeria, Tunisia and Egypt all reported problems with the acquisition of sufficient vaccines for the purpose of **emergency vaccination**. This was related both to the quantity of vaccines needed in a short period of time, but also to the necessity to find a vaccine strain providing adequate protection against the circulating field strain. The experienced difficulties have highlighted the need for the establishment of a regional vaccine bank from which all North African REMESA countries would be able to draw from in case of FMD emergencies and that should contain FMD vaccine strains targeted towards the strains circulating in or expected to arrive in the region. A resolution to this effect has already been endorsed by the Joint Permanent Committee of REMESA.

Problems have also been identified in the **design of the campaigns** for routine and emergency vaccination. Countries have taken different approaches regarding the livestock species to be vaccinated (cattle only vs cattle and small ruminants), leading to different levels of protection between countries. A regional harmonization of vaccination campaigns, based on a risk assessment, would be beneficial (see also below).

3.5 Resource mobilization

Countries are currently moving from the initial emergency response to a long-term prevention and control mode. As a result of the current epidemiological situation in the North African region and the high risk of re-introduction, countries will need to secure **long-term human and financial resources**. This will require strong advocacy with policy makers to convince them to allocate sufficient budget. Also in countries where FMD is already endemic, such as Egypt, Libya or Mauritania, advocacy with policy makers is needed to maintain or strengthen FMD control efforts. A demonstration of the socio-economic impact of FMD is an important support tool for the advocacy activities.

3.6 Regional harmonization

FMD in North Africa requires a **regional coordination** for prevention and control, especially for movements of people, animals and products across borders which occur frequently and are partially unregulated. This may lead to situations where for example animals, deliberately or not, escape vaccination or where the impact of certain focused control efforts in one country cannot reach its full potential because neighboring countries place their focus on other control activities. Regional coordination is of particular interest for vaccination, movement control and surveillance to ensure that the objectives and implementation modalities of the activities are aligned.

3.7 Risk assessment

The spread of FMD across North Africa has been very rapid and transmission pathways are not fully understood. The development of FMD in North Africa has highlighted the need to conduct a **risk assessment** for FMD spread in the region, which should take into consideration the environmental, economic and animal health factors that are driving forces behind FMD spread. The risk assessment should lead to a better understanding of the disease dynamics in the region and could help for example to demonstrate which areas are at high risk for (re-)introduction of infection or to support decision making about the most suitable approach for preventive or emergency vaccination, movement control or other control measures.

4. Recommendations to strengthen the prevention and control of FMD in North Africa

Below is a summary of the proposed recommendations that will allow identifying the key aspects towards a regional strategy.

4.1 Improvement of the prevention

Understanding and control of animal movements

The current level of development of traceability systems differs greatly between countries and several countries should undertake efforts to improve their current traceability systems. It is important to encourage the continuation of these activities. Apart from a complete livestock census and a detailed knowledge of the herds and animal movements, activities can be shared among countries, such as the mapping of movements across the region in relation with the influence of external factors (economic, availability of pasture, animal disease outbreaks...) on these movements. This work requires expertise (either already available in some countries or via international support) which could lead to a regional mapping of transboundary movements of animals, common resting and water points and make these information available in real-time, for example through an internet platform.

Strengthening of the cross-border cooperation also appears to be a key element to improve prevention. Local actions at specific, well-known transit points for livestock (easy access, water point,...) should be encouraged. At these strategic points, exchange of information or even inspections and control should be done more easily.

Apart from the understanding and traceability of movements of animals and products, enforcement of the movement regulations is the second important point for prevention. Reduction of illegal movements (disrespecting either all of some of regulatory conditions) is an important objective. Therefore, tracking down these movements is not enough, we must also show and demonstrate that controls and inspections are implemented. This is even more important when additional movement restrictions are put in place in response to nearby disease threats (such as closure of markets, ...). It is equally important to control **and** sanction if necessary. To achieve this, targeted control activities at strategic points for the risk of introduction should be conducted, which will also lead to a better visibility of the control activities. Targeting markets, traders or implementation of random surveillance programs in high risk areas are possible ways to conduct surveillance for the introduction of the disease. Main transport routes and border crossings points are also ideal strategic points to distribute information about the prevention.

Furthermore, in response to a nearby disease threat, movements conditions can be tightened through prohibitions, restrictions or by certification, ... Once again, areas with an animal turn-over (market, assembly point, ...) or those located near to infected areas are targeted first.

Strengthening of cross-border animal movement control regarding illegal introduction of animals and products.

Continuation of animal identification, tracking and tracing of their movements.

Mapping of animal movements, knowledge at regional level of transportation routes based on local conditions.

Targeted surveillance

The ideal situation is to know the sanitary and immunological status of the herds over time as an important prerequisite before any definition of a strategy. Instead of covering the entire population, surveys can be either representative through a proper sampling or targeted according to a risk assessment. As discussed previously, strategic or exposed areas should be surveyed in order to detect introduction of disease at an early stage. This can be achieved or strengthened through a targeted or temporal approach based on high risk periods (transhumance, before celebrations, ...). Surveillance can also be restricted to sentinel animals.

In addition to national initiatives, such surveillance activities may be the application of a regional program which will allow for a more coherent approach to the epidemiological situation. Coordination between laboratories as well as the availability of diagnostic kits and reagents can also be considered at a regional level.

In addition to an active surveillance program, it is necessary to maintain a passive or clinical surveillance and for this, a good network of actors is necessary. To achieve this, awareness of actors should be maintained through information and education activities. It is equally important to support the implementation of surveillance and suspicion activities.

Harmonization of the methodology and protocols as well as support and expertise are also welcome.

Strengthening of passive surveillance

Targeting active surveillance: high risk areas and periods

Harmonization or implementation of a regional surveillance strategy

Coordination by a regional reference laboratory

Strengthening cooperation between stakeholders, awareness and training

Preventive vaccination

Vaccination is also a tool to prevent spread of infection in an area threatened by the disease. In a disease free country, vaccination of the entire country or the establishment of a buffer zone along the border can be considered. Based on these situations, expertise may be necessary to identify the susceptible species to be vaccinated (cattle, or small ruminants and bovine?) and to determine the frequency of booster vaccinations (annual or semi-annual). Success of the vaccination campaign is also associated with the ability to verify its effective achievement and with the availability of resources for implementation.

All of the above points require expertise and coordination which will be discussed in the section on emergency vaccination (see chapter “control”).

Strengthening of biosecurity

Biosecurity measures must be known and implemented in proportional manner to the current risk level, in particular be vigilant with regard to the sanitary status of newly introduced animals and to precautions which should be taken when moving between two herds. For small ruminant herds, it is more difficult to put in place such biosecurity measures, in particular in agro-pastoral production systems. These provisions and considerations will be even more important during the implementation of control measures, where the challenge is to avoid being a vector of disease transmission.

Finally, all these measures should be supported by appropriate regulations and an awareness campaign focused on prevention and targeting different stakeholders (see also the following sections).

4.2 Strengthening of FMD control

Before declination of control strategies, cost-benefit studies on the economic impact are necessary to better understand each strategy within its specific context and to be able to conduct a better planning.

In addition, this expertise is complemented with support for the implementation of each measure and associated surveillance activities.

The measures outlined in the prevention part are to be continued and strengthened in parallel with operated control measures.

Control and restriction of animal movements ... and effective closure of livestock markets during outbreaks, certification,....
Strengthening of biosecurity measures
Cost-benefit analysis: preliminary studies to identify epidemiological and economic risk factors
Preparation of a regional control plan → control programs with support of/collaboration with experienced countries, international organization and following PCP

Outbreak management: Culling

Culling is an effective measure to control outbreaks when there are sufficient resources deployed during the early stages of an outbreak, pending the deployment of vaccination. It can significantly and rapidly reduce the presence and circulation of the virus in a short period of time.

It is accepted and respected if farmers are compensated for the slaughter of animals. In addition to these measures, it is essential to conduct an outbreak investigation and identify contact farms with outbreak farms, in particular long-distance contacts. In the absence of a reliable traceability system, it is necessary to verify and check any information.

Implementation of sanitary measures in and around outbreak farms (confiscation and isolation of infected animals, stamping out, disinfection)
Financial support for necessary personal equipment (PPE) and culling facilities
Financial support for compensation

Prevention of spread of infection: emergency vaccination

Vaccination is conducted in addition to culling.

In contrast to preventive vaccination, the objective of emergency vaccination is to provide protection against the circulating field strain or to booster the immunity of previously vaccinated livestock. It is necessary to plan for a rapid distribution of appropriate vaccines and therefore to have access to a vaccine or antigen bank, which was a weakness in 2014.

The establishment of a joint antigen bank has already been discussed in the context of REMESA. This bank would allow quick availability of and access to vaccine in case of an emergency, which - in contrast to a preventive vaccination campaign - cannot be planned in advance.

Expertise is required both to determine the composition of the bank (strains, number of doses, ...) and to identify a global/regional strategy for its mobilization.

Establishing a vaccine/antigen bank at regional level with regional and international support (financial and technical)
Preventive vaccination: Establishment of a vaccine supply taking into account the regional animal health developments, securing necessary orders.
Emergency vaccination: mobilization and access to vaccines in case of emergency
Development of tools to assist the design, implementation and evaluation of vaccination campaigns

Surveillance during and after the outbreaks

Surveillance programs will depend on the selected control measures. It is necessary to adapt these surveillance activities to get a good knowledge of the epidemiological situation for the sake to guide control measures, to detect new outbreaks, to evaluate the success of vaccination activities (measuring vaccination coverage), ...

Finally, after the control /eradication of the outbreaks, the objective of surveillance is to demonstrate that the virus is no longer circulating. This is an important phase indicating to the managers that the disease has been controlled and allowing them to lift certain measures, to communicate and to re-establish trust among the different partners at local, national and international levels.

Again, assistance to establish a surveillance program is necessary.

Strengthening of epidemiological surveillance; conducting representative serological surveys on vaccination efficacy and virus circulation
Consideration of strengthening the laboratory capacities to manage the crisis

4.3 Strengthening of communication

Animal health governance

For the successful control of a disease, the roles of different actors and the communication among them must be established and defined. Each stakeholder needs to be involved to potentiate the actions. It is necessary to bring together actors at different levels: local, national and international. Therefore, collaboration must be established at these different levels by competent bodies (formal or informal) of expertise, decisions or exchange of animal health information.

Strengthening coordination among all partners
Establishment of a surveillance or communication committee (national or regional)
Creation of opportunities where professionals can exchange information
Activation of the REMESA website to exchange animal health information

Communication

The means of communication must be targeted towards its audience (livestock professionals, veterinarians, public and private technicians and general public,...) and towards the messages that should be delivered. Communication means must have two directions: information and feedback. Each tool must be adapted to the local infrastructure and to the means of communication of the actors (local radio, ...). Messages and types of support can be prepared.

Preparation of awareness tools and their implementation for each target audience
Harmonization of technical communication media (support and technical expertise at national, regional and international level)
Creating awareness among actors during peace time
Improving feedback for experience

4.4 Improving the mobilization of human and financial resources

A cost-benefit analysis of the prevention and control measures is essential to justify the mobilization of human and financial resources. Critically reviewed and well-explained strategies together with a good communication help to establish an advocacy to increase resources at local, national and regional levels.

Mobilization of human resources and education

In order to achieve efficacy in the control measures, the mobilization of the veterinary services and the associated chain of command must be clear and well established, which will allow the veterinary services to put in place their activities.

In addition to specialists within the veterinary services, it must be possible to mobilize all actors based on their competences and to train them to manage and respond to a crisis through awareness and education activities as well as exercises.

This may mean the involvement of private veterinarians in surveillance and vaccination activities and therefore the organization of regular information and education activities for private and public veterinarians as well as the organization of simulation exercises.

Furthermore, targeted actions as described earlier for prevention and surveillance will allow for better concentration and rationalization of available means and resources.

Regulatory and financial framework

Measures and the associated funding should be foreseen and laid down in the regulations; for example, measures to restrict movements and sanctions in case of non-compliance, compensation for culled animals, funds for the purchase of vaccines and necessary equipment, ...

In addition to national resources, partnerships and international support (REMESA, FAO, OIE, ...) can be considered for the establishment of a joint vaccine bank, the establishment of a specific animal health fund, ...

Cost-benefit analysis of control measures to justify resources and required financial means
Harmonization of regulatory framework for measures and resources, regional and international support in the preparation of regulations
Good structure of veterinary services, administrative and financial autonomy
Establishment of a regional animal disease fund (national/regional)

5 Conclusion

The format and implementation of the workshop have been very well received.

This workshop has allowed to exchange experience between participants but also to identify possible lines of action and ways to improve available resources for prevention and control of foot and mouth disease.

Every country representative has been able to profit from the experience of other countries and to conduct an analysis of priority and feasible actions in the prevention and control of foot and mouth disease for his own country.

In addition, the workshop has identified national actions which arise from these results and has identified measures with regional (UMA-REMESA) and international (FAO-OIE...) support, which may lead to multilateral agreements.

- Technical expertise in the preparation of surveillance or control programs, in mapping of movements, ...
- Technical and financial support for the establishment of a bank and mobilization of vaccines

Collaboration for exchange of information, communication, education during planning and disease management

Annex 1: Agenda

Monday, 24 th of August 2015		
09:00 - 09:30	Opening ::EuFMD, FAO Subregional Office for North Africa, OIE North Africa and UMA	
9:30 - 10.45	Country situation ::Presentations by countries (15 min per country)	
10.45 - 11:15	Coffee Break	
	Working Groups	
11:15 - 13:00	<u>Session 1: Entry of infection</u> Why did the incursions into Tunisia and Algeria occur? Which risk pathways were involved? Are there other risk pathways that need be recognized to avoid a repeat? What did we learn? What could be done better? What are the key lessons for the regional strategy?	<u>Session 2: Silent spread period</u> Was there a silent period of spread before notification to authorities? How important was it? What could be done to reduce it? What did we learn? What could be done better? What are the key lessons for the regional strategy?
13:00 - 14:00	Lunch	
14:00 - 15.30	Continue with Session 1 - Conclusions	Continue with Session 2 - Conclusions
15:30 - 16:00	Coffee Break	
16.00 - 17.30	Plenary session. Presentation of outcomes and discussion	
Tuesday, 25 th of August 2015		
8:30 - 9:00	Introduction activities of day 2	
	Working Groups	
09:00 - 10:45 Session 3 - 4	<u>Session 3: Control of the epidemic</u> How were outbreaks controlled? What were the problems to achieve this? How can the contingency plan be improved? What did we learn? What could be done better? What are the key lessons for the regional strategy?	<u>Session 4: The long tail of virus circulation</u> What are the problems in reducing the circulation of virus? What it the confidence that FMDV is no longer circulating in the areas where outbreaks occurred? What evidence on the effectiveness of control measures? What did we learn? What could be done better? What are the key lessons for the regional strategy?
10:45-11:15	Coffee Break	
11:15-12:00	Continue with Session 3 and 4- Conclusions	
12:00-12:30	Plenary session. Presentation of outcomes and discussion	
13.00-14:00	Lunch	
14:00-15:30 Session 5-6	<u>Session 5: Recovery</u> What were the consequences of the outbreaks? How well has recovery occurred at livestock owner, zone and national level? What could have gone better? How could the confidence in control be improved at regional level? What did we learn? What could be done better? What are the key lessons for the regional strategy?	<u>Session 6: Leading towards Regional Strategy</u> Reducing the risk of entry Reducing impact of incursions Improve capacity of control What can be done? What are the priorities?
15:30-16:00	Coffee Break	
16:00-16:30	Continue with Session 5 and 6 - Conclusions	
16:30-17:30	Plenary session. Presentation of outcomes and discussion	
	Social Dinner	
Wednesday, 26 th of August 2015		
09:00 - 12:00	<u>Session 7: Regional Strategy</u>	
Session 7	Summary of lessons learnt – Recommendations - Support under REMESA framework	
End of the Workshop		

Annex 2: List of participants

Workshop EuFMD- REMESA: Epizooties FMD in North Africa: Towards a regional strategy based on lessons learned - Rabat, Morocco - 24-26 Aug 2015				
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Annex 3: Output session 1

1. Les facteurs clés / les voies principales d'introduction

1. mouvements d'animaux liés au commerce → flux dépendants des prix des marchés
bovins : souvent d'est en ouest
petits ruminants : ouest en est + périodes de nombreux mouvements de l'Aid et transhumance
2. zones frontalières : points de rassemblement (pâturages et points d'eau commun) ou d'échanges d'animaux occasionnels
3. véhicules et personnes

2. Les mesures optimales pour atténuer

mouvements commerciaux difficilement maîtrisables hors renforcement des contrôles des flux illégaux
zone frontalière : contrôle possible sur zone ciblée
sensibilisation générale aux respects réglementation et bonne pratiques

3. Niveau de mise en œuvre de mesures en Afrique du Nord (différents pays)

En 1^{er} lieu, mesures efficaces pendant 15 ans et épizootie arrêtée avant d'atteindre le Maroc montrent efficacité.

Mesures mises en œuvre différentes selon les pays :

- interdiction des marchés : intéressante mais difficile à maintenir
- identification et/ou vaccination et/ou certification avant mouvement
- contrôles ciblés avec sanctions (abattage,...)
- communication/formation des acteurs

4. Les difficultés rencontrées

difficulté de tenir sur la durée ces mesures qui sont en fait des mesures d'urgence.
système d'identification des bovins partiel et absent pour petit ruminant
nécessité de renforcer la collaboration avec éleveurs

5. Enseignements tirés et des améliorations en vue d'une nouvelle stratégie

- Stratégie régionale sur 2 zones à considérer:

1. Afrique du Nord
2. Mauritanie avec voisins frontaliers sud/ sud est.

- Stratégie sur 2 temps :

- court terme :
 - o gérer l'urgence : renforcement contrôle, sensibilisation pour renforcer la détection précoce (surveillance passive) et +/- surveillance active ciblée. Instaurer mesures lors de mouvements : vaccination /identification/certification
 - o renforcer/encourager la collaboration locale (en plus du niveau national) au niveau des frontières : points contrôle ciblés
- long terme : continuer les actions déjà en cours sur
 - o la responsabilisation des éleveurs, des maquignons, ... de tous les acteurs (encadrement réglementaire et communication)
 - o les efforts/actions sur l'identification.

Annex 4: Output session 2

Mesures susceptibles de réduire la période silencieuse	Harmonisation régionale des mesures de contrôle	Enquêtes sérologiques régulières	Meilleure sensibilisation des éleveurs	Disponibilité de capacité de diagnostic précoce	Contrôle des mouvements des animaux	Identification des animaux	Indemnisation des éleveurs	Réseau de surveillance local	Renforcement de la surveillance sérologique et clinique associés aux mouvements des animaux et aux marchés à bestiaux	Vaccination adéquate (timing, couverture, delivery and quality of vaccine)	Amélioration des moyens des vétérinaires sur le terrain	Formation de tous les partenaires
Facteurs déterminants ou influençant la période silencieuse de circulation du FMDV												
Non déclaration des symptômes cliniques (reporting)			X				X	X				X
Existence de système performant de surveillance (active et passive)	X		X	X	X	X		X	X		X	X
Carence ou absence des programmes de sensibilisation des acteurs			X					X			X	X
Absence de volonté de déclaration			X				X	X				
Couverture fonctionnelle vétérinaire du territoire								X	X	X	X	
Manque de moyens logistiques et de communication	X	X						X	X	X	X	
Status immunologique des animaux sensibles		X	X	X					X	X	X	X
Coexistence d'espèces animales sensibles au FMDV			X									
Survenue de fêtes religieuses (i.e.: Aid de sacrifice)					X	X			X	X		
Présence d'autres maladies pouvant prêter à confusion avec la FA			X	X				X	X			X
Capacité de diagnostic expérimental de certitude de la FA		X		X				X	X		X	X
Mouvements non contrôlés ou illicites d'animaux ou de denrées animales (marché, contrebande, importation...)	X		X		X	X					X	X
Instabilité politique ou sécuritaire												
Signes cliniques masqués (usage de vaccins inadéquats)		X		X				X	X			X
Manque ou indisponibilité de vaccins	X									X		
Manque de communication entre les pays voisins ou partenaires	X							X				
Race des animaux												
Présence d'une faune sauvage réceptive	X	X					X					
Facteurs climatiques ou géographiques												

Mesures prises par les pays pour réduire la période silencieuse

Algérie

Activer le plan national d'Urgence
Mettre les moyens disponibles à la disposition des vétérinaires
Surveillance sérologique et clinique
Augmentation de la sensibilisation
Formation des jeunes vétérinaires
Restriction des mouvements des animaux à partir des régions frontalières
Vaccination

Maroc

Activation du comité de vigilance et mise en place d'une cellule de veille
Surveillance renforcée le long des frontières
Surveillance renforcée à l'approche de l'aïd
Formation des vétérinaires
Vaccination préventive adéquate
Sensibilisation des acteurs
Surveillance sérologique le long des frontières
Accélération du système d'identification des bovins et des camelins
Lancement d'une étude pour cartographier les mouvements des animaux

Tunisie

Contrôle des mouvements
Formation des vétérinaires pour cartographier les mouvements d'animaux
Programme de sensibilisation des partenaires sur la FA
Vaccination préventive, notamment dans les marchés à bestiaux
Renforcement de la surveillance active et passive
Formation des vétérinaires privés et publics

Mauritanie

Sensibilisation des éleveurs
Formation des acteurs du terrain sur la FA
Mise à jour des protocoles de surveillance
Renforcement de la vigilance le long des frontières sud et est
Préparation d'enquêtes
Renforcement de la capacité de diagnostic de laboratoire
Harmonisation régionale sur la surveillance et des mouvements d'animaux

Annex 5: Output session 3

1. Les facteurs clés

- Une stratégie évolutive et dépendante des circonstances de découverte du foyer
- Différentes mesures de gestion selon l'objectif : éradiquer, contenir la maladie/limiter la diffusion/ s'assurer de la non contamination
- Différents niveaux : zone infectée/ zone peri-focale/nationale

2. Les mesures optimales pour atténuer

- mesures de restriction/bio-sécurité
- abattage
- vaccination
- communication

appuyées par les résultats des enquêtes

liste des conditions pour la mise en oeuvre, objectifs et difficultés rencontrées

3. Niveau de mise en œuvre de mesures en Afrique du Nord (différents pays)

Mesures clairement identifiées selon objectifs et mises en oeuvre selon contexte

4. Les difficultés rencontrées

- incertitudes sur l'évolution de la maladie lors découverte 1^{er} foyer
- définition rapidement zones : foyers, zone de surveillance
- tenir les mesures sur le long terme : mobiliser suffisamment d'agents pour l'ensemble des actions (mesures et contrôles) – respect des mesures
- approvisionnements vaccins
- système de compensation/financement acte vétérinaire/budget des services

5. Enseignements tirés et des améliorations en vue d'une nouvelle stratégie

Sécuriser la situation actuelle post épizootie O puis envisager perspectives :

- maintenir connaissance de la situation pour un pilotage des mesures
- consolider la communication avec les représentants : préparation en temps de paix et pendant la crise ; National et local
- sécuriser le financement des mesures : services Etat, compensation,... → Importance d'une analyse coût/bénéfice selon les différents cas de figure de stratégie

Au niveau régional : réflexion banque vaccinale pour vaccination d'urgence

Annex 6: Output session 4

Facteurs déterminants la circulation du FMDv dans une population

- Mouvement des animaux et des produits infectés
- Abattage partiel ou absence d'abattage des animaux réceptifs dans un foyer
- Non-respect des mesures de biosécurité par les éleveurs, les vétérinaires, le personnel de l'élevage
- Vaccination inadéquate
- Non déclaration des foyers
- Absence de dépistage
- Désinfectants non efficaces
- Vaccination (période, chaîne de froid, matériel à usage multiple, respect du protocole...)
- Type d'élevage, densité animale
- Animaux excréteurs sans signes cliniques
- Circulation de véhicules non désinfectés
- Marchés à bestiaux non contrôlés régulièrement
- Usage de pâturages en commun
- Non sensibilisation des éleveurs
- Prêt de Géniteurs
- Absence ou insuffisance d'indemnisation

Mesures disponibles pour réduire la circulation du FMDv

- Respect strict des règles de biosécurité au niveau des fermes
- Formation des acteurs concernés sur les règles de Biosécurité
- Indemnisation correcte des éleveurs (effet indirect)
- Séquestration des foyers et restriction des mouvements
- Collaboration efficace avec les départements en charge du maintien de l'ordre et de la sécurité
- Vaccination efficace péri focale
- Abattage et destruction des animaux réceptifs et sensibles dans les foyers
- Harmonisation régionale des mesures de lutte
- Disponibilité de vaccins
- Sensibilisation des éleveurs

Comment mesurer l'absence de circulation virale

- Enquête sérologiques et/ou virologiques statistiquement représentatives utilisant des tests appropriés
- Surveillance passive clinique
- Enquêtes sérologiques et/ou virologiques statistiquement régulières et représentatives utilisant des tests appropriés
- Elevages sentinelles

Annex 7: Output session 5

1. Les facteurs clés

collecter les informations nécessaires ou contrôler pour :

- la levée des mesures/ reprise d'activité
- clôturer l'événement, et déclarer que la maladie ne circule plus ou n'est plus présente
- répondre aux conditions pour un statut ou un stade PCP

2. Les mesures optimales pour atténuer

- respect mesures d'assainissement : vaccination, abattage
- respect mesures de bio-sécurité et de désinfection
- surveillance

3. Niveau de mise en œuvre de mesures en Afrique du Nord (différents pays)

selon les mesures de contrôles

protocole de surveillance différents

actions au niveau peri-focal et au niveau national

4. Les difficultés rencontrées

peu de difficultés rencontrées pour cette phase
hormis les facteurs limitant des problèmes de tracabilité et mobilisation moyens

5. Enseignements tirés et des améliorations en vue d'une nouvelle stratégie

Communication locale/nationale/internationale:

- retour d'expérience
- restauration de la confiance

Annex 8: Output session 6

Mesures communes	Mesures différentes
Contrôle des mouvements d'animaux	Choix des espèces cibles (Bv/OV/CP)
Vaccination généralisée	Lieu et populations ciblées
Interdiction des marchés à bestiaux dans les zones infectées	Mise à jour de la réglementation relative à la FA
Sensibilisation des éleveurs et des professionnels de l'élevage	Régionalisation de l'octroi des indemnisation aux éleveurs
Enquêtes sérologiques	Identification de certaines espèces animales
Formation des vétérinaires	Interdiction d'importation des aliments pour animaux et produits alimentaires d'origine animale à partir des pays infectés
Echange régional d'informations zoosanitaires	
Abattage partiel des animaux cliniquement atteints	
Communication aux médias et au grand public	
Implication directe d'autres départements	

Problèmes communs rencontrés	Problèmes différents rencontrés
Mouvement d'animaux liés au commerce ou à la transhumance ou à l'approche de l'aïd	Contrôle des marchés informels à bestiaux
Maintien de la fermeture des marchés à bestiaux	Temps d'acheminement des échantillons au laboratoire
Identification et traçabilité animale	Surdéclaration dans certains cas
Disponibilité de vaccins	Délai de communication des résultats de laboratoire
Application correcte des mesures de biosécurité	Abattage des animaux sensibles infectés ou en contact
Insuffisance de moyens logistiques	Disponibilité des kits de diagnostic
Coordination et collaboration avec les partenaires impliqués	Réticence des éleveurs à la déclaration, à la vaccination et à la collaboration avec les SV ...
	Insuffisance des moyens de communication
	Absence /insuffisance d'indemnisations
	Procédures de dédouanement des kits de diagnostic
	Insuffisance de certaines rubriques budgétaires
	Définitions des foyers et des zones de surveillance
	Maintien et respect sur le long terme des mesures de surveillance et de lutte
	Rémunération des actes des vétérinaires mandatés
	Capacité des laboratoires

Leçons apprises communes	Leçons apprises spécifiques
Maitrise des mouvements d'animaux le long des frontières	Nécessité de réaliser une analyse de risque en tenant en considération les facteurs environnementaux, économiques, zoosanitaires...
Sécurisation de la situation actuelle vis-à-vis du sérotype O du FMDV	
Consolidation de la communication avec les acteurs concernés avec une préparation en "temps de paix"	
Sécuriser le financement des mesures relatives à la surveillance et à la prophylaxie anti-aphteuse	
Nécessité de mise en place d'une banque régionale de vaccins	
Nécessité d'une approche régionale de surveillance et de lutte anti-aphteuse	
Importance de l'échange des informations zoosanitaires en temps opportun entre les pays de la région	
Sécuriser des stocks de vaccins	
Cartographier dans le temps et dans l'espace les pâturages et points d'eau communs de part et d'autre des frontières	

Annex 9: Questionnaire de satisfaction

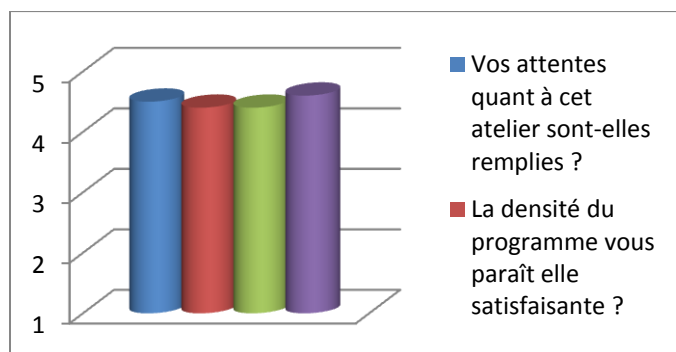
Nombre de participants et observateurs qui ont évalué l'atelier : 16

Catégories de satisfaction possible

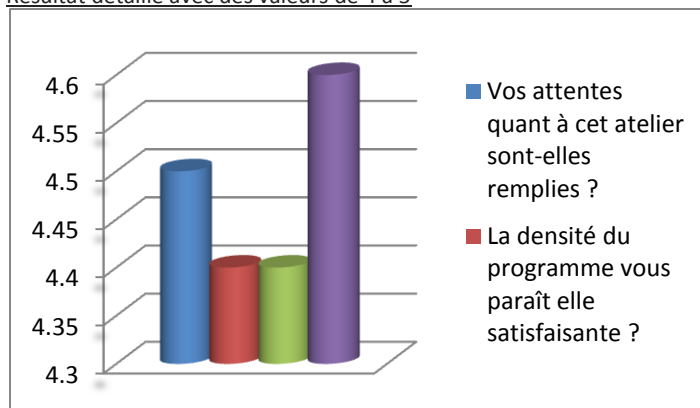
- 1 : pas satisfait
- 2 : peu satisfait
- 3 : neutre
- 4 : satisfait
- 5 : très satisfait

Résultat

Questionnaire de satisfaction	
Vos attentes quant à cet atelier sont-elles remplies ?	4.5
La densité du programme vous paraît elle satisfaisante ?	4.4
Le format par session et groupe de travail était il adapté ?	4.4
L'accueil correspondait-il à vos attentes ?	4.6



Résultat détaillé avec des valeurs de 4 à 5



Remarques libres:

- Il est important de veiller à ce que tous les participants travaillent avec tous les enseignants dans les groupes de travail ;
- Améliorer l'analyse coûts-avantages pour identifier les meilleurs mécanismes pour lutter contre ;
- Le problème de la traduction français / anglais ralentit la capacité «de suivre la discussion.