

# **Rapid Assessment Mission Report on Foot-and-Mouth Disease Management in Egypt**

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**12-16 March 2012**

By

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## **Acronyms**

<b>AHRI</b>	Animal Health Research Institute
<b>EC</b>	European Commission
<b>ECTAD</b>	Emergency Centre for Transboundary Animal Disease, FAO
<b>EuFMD</b>	European Commission for the Control of Foot-and-Mouth Disease (an Inter-Governmental Commission based in the FAO)
<b>FAO</b>	Food and Agriculture Organisation of the United Nations
<b>FMD</b>	Foot-and-mouth disease
<b>GOVS</b>	General Organisation of Veterinary Services
<b>SAT2</b>	Southern African Territories type 2 strain of FMD
<b>CVO</b>	Chief Veterinary Officer

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## 1. Summary

Up on the request of the Egyptian veterinary authorities an EuFMD/FAO team composed of Dr Chris Bartels (Veterinary epidemiologist, EuFMD/FAO consultant) and Dr Eoin Ryan (FAO Animal Health Officer FAO/EuFMD) travelled to Egypt from 11<sup>th</sup> to 15<sup>th</sup> March 2012 for assistance in relation to the current FMD epidemic. The objectives of the mission were to

- undertake a rapid assessment of the outbreak situation
- make preliminary recommendations to the Egyptian authorities on actions to be taken, particularly those applicable in the immediate and short term, that could reduce the spread of disease
- collect baseline information to facilitate further FAO technical support.

The rapid assessment team spent two and half days in Cairo and one day in Gharbia Governorate investigating suspected FMD cases. Extensive discussions were also held with Egyptian veterinarians in GOVS and AHRI. Towards the end of the mission, a set of preliminary recommendations was drawn up, based up on consultative processes involving Egyptian colleagues and FAO staff in Cairo.

The recommended actions covered the areas of communication, vaccination, biosecurity, movement controls, recording and reporting of disease, monitoring and surveillance, animal markets, and organisation of FMD control structures. These proposals have been refined following further consultation with Egyptian colleagues and input from FAO experts both in Cairo and Rome.

## **2. Introduction and Terms of Reference**

### **2.1 Background**

FMD is endemic in Egypt, with serotypes O and A considered to circulate continuously. In 2006, a novel type A strain, genetically related to the subsaharan African Group VII topotype, entered Egypt and rapidly spread throughout the ruminant population, causing severe losses and becoming endemic, as shown by later isolations of closely related viruses in 2009. As a result of the ongoing challenges presented by FMD in Egypt, a collaborative Technical Cooperation Project was established between the FAO and the Government of Egypt, managed by FAO/ECTAD, and which was followed by a second project supported by EuFMD/EC funding which had the aim of assisting Egypt to undertake actions required to revise national strategy based on the framework of the FAO/OIE Progressive Control pathway (PCP) for FMD. The principal activities of the second project were to enhance passive surveillance in Egypt with isolation of field viruses, vaccine matching and further characterisation of field isolates; to implement a nationwide active surveillance study to establish baseline data about FMD (sero)prevalence and identify high- and low-risk areas and risk factors; and to continue capacity building for FMD virological and serological diagnosis in the Animal Health Research Institute (AHRI) in Cairo. During February 2012, a great number of FMD events were reported throughout Egypt despite a nationwide vaccination campaign in January 2012. A final project workshop was held on 29th February in Cairo. At this workshop<sup>1</sup> the analysis of the epidemiological situation and laboratory findings suggested exotic FMDV serotypes or strains might be responsible for the pattern of outbreaks, and actions were agreed to clarify the situation that resulted in confirmation of SAT2 and other serotypes among recent samples from outbreaks. The vaccines currently used in Egypt do not include SAT2. The recent FMD infection is thus apparently sweeping through a wholly susceptible ruminant population. The EuFMD Commission, having funding for emergency actions, agreed to provide an immediate mission of an expert with high experience of working with FAO and the Government of Egypt on the epidemiology and control of FMD (Dr Bartels) and an FMD expert and officer of EuFMD/Animal Health Service (Dr Ryan).

### **2.2 Scope of the mission**

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<sup>1</sup> Report and Presentations available from EuFMD Commission, FAO

The scope of the mission was to carry out an assessment of the current FMD situation in Egypt, to assess the response of the Egyptian authorities, and to suggest actions which could be taken to assist the authorities in controlling FMD.

### **2.3 Specific objectives**

The specific objectives of the mission were:

- To assess the state of the current FMD epidemic in Egypt
- To determine whether it is principally due to SAT2
- To determine whether there is evidence of a novel type A virus in the population
- To determine the spatial distribution of FMD in Egypt, by assessing reported and confirmed outbreaks.
- To assess the responses of the Egyptian authorities in relation to biosecurity, markets, movement controls, communication to stakeholders, and internal management of the problem.
- To obtain information on the numbers of reported and confirmed cases of FMD and of SAT2 specifically.
- To assist the Egyptian authorities in developing strategies and specific actions to control FMD.

### **2.4 Limitations of the rapid assessment mission**

This mission was planned and carried out at short notice due to the time-critical nature of the situation. However, the mission was informed by the results of the previous 3 years of FAO/EuFMD/GOVS joint activities on FMD in which one mission member (Chris Bartels [CB]) had been the epidemiology consultant. A depth of local institutional knowledge was in place in the team since CB had also worked extensively on veterinary service organisational structure and governance under an EC Twinning project. As a result, the mission was able to focus on the field situation and the main options for reducing or controlling spread and used the information provided by GOVS and Governmental institutions. A more in-depth analysis of issues such as the role of market traders, value chain analysis, etc, was not possible in the short time available.

### **2.5 Terms of Reference:**

The terms of reference for the EUFMD/FAO mission were:

- To advise GOVS on immediate actions for disease control
- To collect information on the situation and provide this to the FAO, to assist the identification of supportive actions

### **3. Activities conducted**

The activities conducted are described in detail in chapter 6.3. In summary, the team conducted several meetings and discussions with staff from GOVS, conducted a meeting in AHRI, carried out field investigations into FMD in Gharbia Governorate, met FAO staff based in Cairo, and held three meetings with Dr Osama Selim (CVO). Initial draft recommendations for actions were drawn up and presented to him at the end of the mission.

### **4. Findings and Conclusions**

At the time of the mission the data analysed by the mission team was for the period to 12<sup>th</sup> March; subsequent data received for period to 19<sup>th</sup> March 2012 is included in this report.

#### **4.1 Timeline of FMD events**

According to information provided by GOVS on 29th March (the FAO FMD Workshop), there was an upsurge in FMD cases in January and February 2012; from information from AHRI on 14th March, the first detection of a SAT2 virus was from samples collected on 18th February, in two samples of epithelium (method of detection not stated). This was followed by three SAT2-positive samples from collections on 26th February, and 14 samples diagnosed as SAT2 that were collected on 27th February (methods not stated).

Given the time usual delay of several days between notification, sample collection and test result, it can be estimated that the first detected SAT2 infection occurred at least prior to 12th February. Taking into consideration that the first detected case is unlikely to be the first clinical case, and that many clinical cases are likely to have occurred prior to this, it is not unreasonable to estimate an introduction date of before 1st February.

#### **4.2 Observations from the field**

4.2.1 On arrival at the village of Khafr Sebtas, there was no evidence of movement controls, quarantine measures, public notices or biosecurity in place. There were multiple routes of access, and the team

were informed that herds of small ruminants travelled regularly through villages. The team visited five individual smallholdings within and just outside the village, as well as examining several cattle on the street which were brought for examination. There appeared to be no awareness of the need for biosecurity to prevent spread by farmers or veterinarians, with the sole exception of the AHRI vet who donned PPE when taking epithelium samples (but who did not use disinfectant). While returning to Cairo, the team witnessed animals being moved by truck on the highway. Our observations lead to the conclusions that, in the area visited, movement controls were effectively practically non-existent.

4.2.2 The district veterinary clinic of Khafr Sebtas was visited; this is a government clinic, which conducts private veterinary work in the afternoons. The clinic consists of an office building with a small crush to hold one bovine outside in an open area. While the team were there, four bovines were brought for treatment by their owners. The team examined these bovines by inspection of the mouths and feet; all four had clinical FMD. There were no biosecurity measures in place (apart from the vet's assistant, who donned a white paper suit after the team arrived, but did not change it between animals). The district veterinary did not appear to appreciate the need for biosecurity, and blamed lack of supplies. No disinfectant was present. It was clear that animals waiting outside the clinic mixed. One FMD-infected buffalo drooled copious quantities of saliva on large areas of the ground. It can be concluded that, at least in Khafr Sebtas, animals visiting the veterinary clinic are likely to be exposed to FMD, both by exposure to other animals and by being examined by vets who do not take any biosecurity precautions between animals.

4.2.3 The mission team examined several bovines, in the district veterinary clinic and in the village itself. In the veterinary clinic, 4/4 bovines examined had clinical FMD. In the village, approximately 10 adults were examined, and only one did not have visible lesions; the others had a variety of oral, pedal and teat vesicular lesions. Four calves were examined in a holding which reported several deaths in cohort buffalo calves; all four had FMD mouth lesions. One dead calf was examined, which had no FMD vesicular lesions; it was speculated that this may have been a case of FMD myocarditis-related sudden death, but laboratory tests would be needed to eliminate other causes of sudden death in calves. It can be concluded that the FMD lesions seen were classical FMD vesicular lesions, of a similar severity to those seen with other serotypes. It can also be concluded that the prevalence of clinical FMD in the area visited was very high.



4.2.4 During the field visit, farmer and vets described widespread mortality in calves, particularly buffalo calves, attributed to FMD. This observation is consistent with previous reports of SAT2 infections elsewhere; however, many other diseases can cause sudden deaths in calves, so in the absence of full post-mortem examinations, it is difficult to be certain of FMD-related acute mortality in calves.

4.2.5 The team were brought to the area used as a livestock market in Khafr Sebtas, and it was not in use. The team were informed by the district epidemiologist that on market day, a policeman enforces the closure of the market; there was no way to verify this. The market space is an open area, privately owned, with two ungated entrances. There is no way for animals to be corralled for inspection or segregated. The team were told that, on normal market days (prior to closure) no veterinary authorities are present, just a policeman to enforce order. When enquiring about the possibilities of private sales or “small markets” being conducted quietly during the current official market closures, the mission team were told that such sales and “small markets” are probably going on. It can be concluded that the current market closures are probably reducing the overall numbers of cattle sales, but that this effect is likely to reduce over time as “unofficial” small market and private sales become more common.

4.2.6 Data obtained in Gharbia governorate, showed that the reported within-village morbidity in cattle and buffaloes was 1.5% and 3.2% respectively with in some villages morbidity rates going up to 30% and 44%.

4.2.7 Data was received indicating that in 22 out of 81 villages in Gharbia Governorate, deaths attributed to FMD were reported. In these villages, the reported mortality rates for cattle and buffaloes were 0.30% and 0.35% respectively (based on number of reported dead divided by total number at risk without any stratification for age. It is however known that most deaths are reported in calves. However, population data by age were not available).

4.2.8 It was clear during the field visit that there were significant problems with communication between farmers and government vets. According to AHRI, the Egyptian government used a dedicated television station to communicate about FMD to farmers. In contrast, the farmers appeared to have received no official information from the government on this issue. The team were told by GOVS staff that the Egyptian media is the source of most information on FMD for farmers, and that most farmers are aware that SAT2 is a different serotype to A and O, and is not covered by the usual vaccine. The information

provided by the media is not based on government communiques and may therefore be inaccurate. There appeared to be no other source of information for farmers, however. It can be concluded that there is a serious problem with communicating accurate factual information to livestock keepers.

4.2.9 There was a marked degree of aggression and hostility from farmers towards government vets, with the team witnessing several angry confrontations. The team were told by GOVS and AHRI vets that this was due to the Egyptian Revolution. There appears to be a lack of power and ability to enforce rules; this clearly affects the ability of GOVS to enforce movement restrictions, market closures, etc.

### **Laboratory information**

4.3.1 The laboratory tests used by AHRI to detect FMD were PCR with sequencing to identify virus strains; they also reported using virus isolation but details were not provided. In addition, AHRI staff used reagents from old kits to create a version of antigen detection ELISA (but this particular method, although useful, is not a validated test method). Following initial detection of samples which tested positive by PCR but negative by antigen ELISA for O and A, sequencing of samples was carried out in AHRI. Dr. Kees van Maanen (EuFMD/FAO consultant) arranged for the sequences to be sent to the World Reference Laboratory, Pirbright, on March 6<sup>th</sup>, and it was confirmed that the sequences were of a SAT2 virus of the type VII topotype. It can be concluded that the lack of an OIE-approved confirmatory test constrained detection in the case of the SAT2 virus.

4.3.2 Sequences from a type A virus isolate were also sent by AHRI for analysis, and were confirmed by the World Reference Laboratory as belonging to the G-IV group; this strain has not previously been detected in Egypt. According to data provided by AHRI, only one type A positive sample has been identified by sequencing as belonging to this group (i.e. a novel lineage for Egypt, usually present in West/Central Africa extending to Sudan). This type A adds to the knowledge that two other type A lineages have been detected in past 3 years and adds to the issue for vaccination since type A vaccines are antigenically variable and usually require tailored (specific) vaccines. The remaining six type A isolates from the recent period have not yet been sequenced, and this should be a priority. It is therefore not possible to conclude whether the current type A viruses in Egypt are predominantly of the established type A lineages or of the novel lineage.

4.3.3 While the mission team were in Egypt, the results of the World Reference Laboratory sequencing of the Libyan SAT2 virus became available. This showed that the Egyptian and Libyan SAT2 virus isolates are

not closely related, although they are both in the type VII topotype. It can be concluded that the current Egyptian SAT2 epidemic is not related to the Libyan isolates, and vice versa. Due to the low numbers of samples being sequences and the lack of active surveillance, however, the possibility that the Libyan SAT2 strain (or other strains) are currently circulating undetected in Egypt cannot be ruled out.

4.3.4 Relatively few samples received were positively serotyped by AHRI, but of these, SAT2 predominates among submissions in February-March. This supports the position that the principle cause of the current disease outbreaks is caused by SAT2 virus, but disease outbreaks caused by the type A strains and type O can be expected to also be occurring. The official number of positive SAT2 samples was given by GOVS as 26 (up to 20<sup>th</sup> March)<sup>2</sup>. The locations of confirmed outbreaks in relation to cattle density is shown in Figure 1.

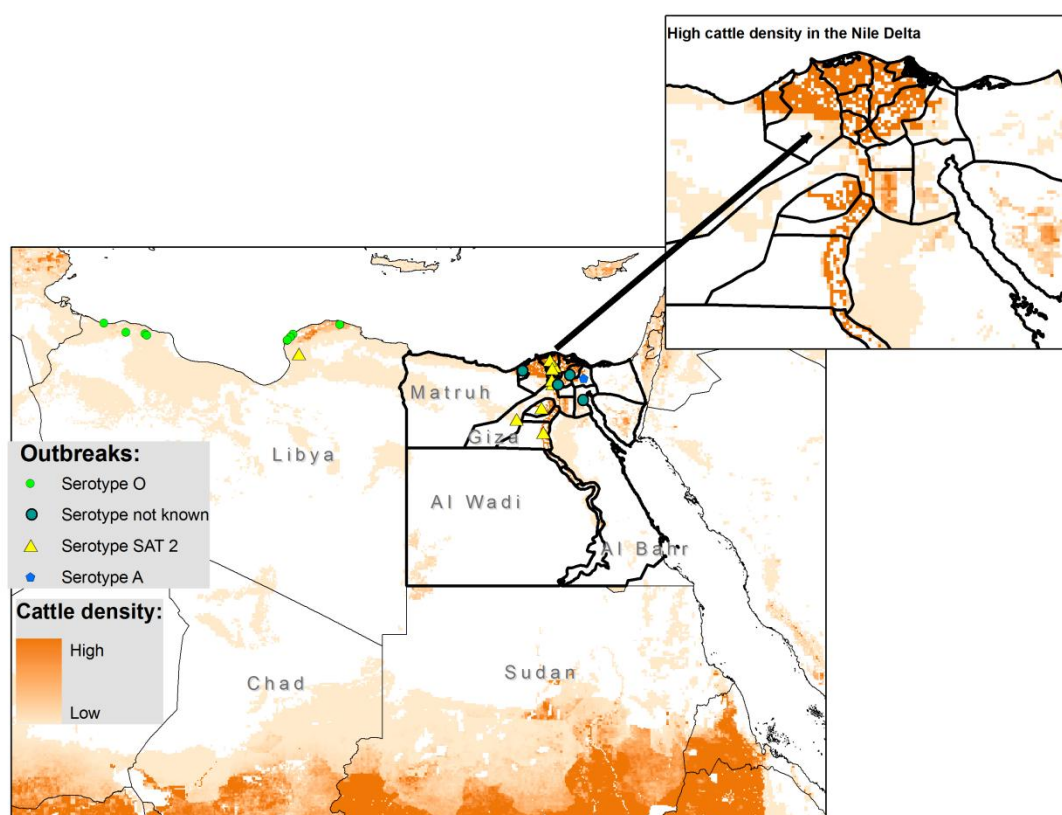


Figure 1. Location of FMD outbreaks in Libya and Egypt during 2012 superimposed over the province-level cattle population densities defined as the number of animals per square kilometre. (Darker shade = high densities, lighter shade = low densities). Courtesy Caryl Lockhart, FAO EMPRES.

<sup>2</sup> According to data provided by AHRI on Wednesday 14 March 2012, of the 81 positive samples tested between January 10<sup>th</sup> and March 11<sup>th</sup> in AHRI, 60 were SAT2.

### **Consultative discussions**

4.4.1 There are problems with data flow within GOVS and between GOVS and AHRI. This results in information being collated locally, which is not necessarily sent to the Cairo GOVS office for further analysis.

4.4.2 Data collected by GOVS is not fully analysed in such a way that control actions can be effectively decided upon, implemented and monitored.

4.4.3 Communication is a problematic issue at senior level, as clear and factual messages to the media and stakeholders are not issued.

4.4.4 Communication to livestock keepers is poor, and there is no guidance to help livestock keepers take actions to reduce their risk of introducing disease. 4.4.5 The recent mention by the Minister for Agriculture of compensation to farmers is likely to have resulted in more notifications than would otherwise have been the case; this may also have increased the reported number of deaths in calves. This has also lead to expectations from farmers which may not be fulfilled. This could have negative consequences for engaging livestock keepers with future disease control efforts.

4.4.6 The FMD situation in Egypt is clearly fluid, with rapid spread of disease and limited information available. The recommendations in this report are based upon the information available at the time of writing, but action plans should be continually revised and updated as the situation develops. It is not possible for FMD to be fully controlled in Egypt at the present time; instead, this mission focussed on practical, concrete actions that could be implemented quickly and which could reduce the spread of disease, the impact of disease, and which could mitigate future outbreaks by improving mechanisms for monitoring and surveillance.

### **FMD Notifications in the period 5<sup>th</sup> to 14<sup>th</sup> March ; analysis of data provided on Monday 19 March 2012**

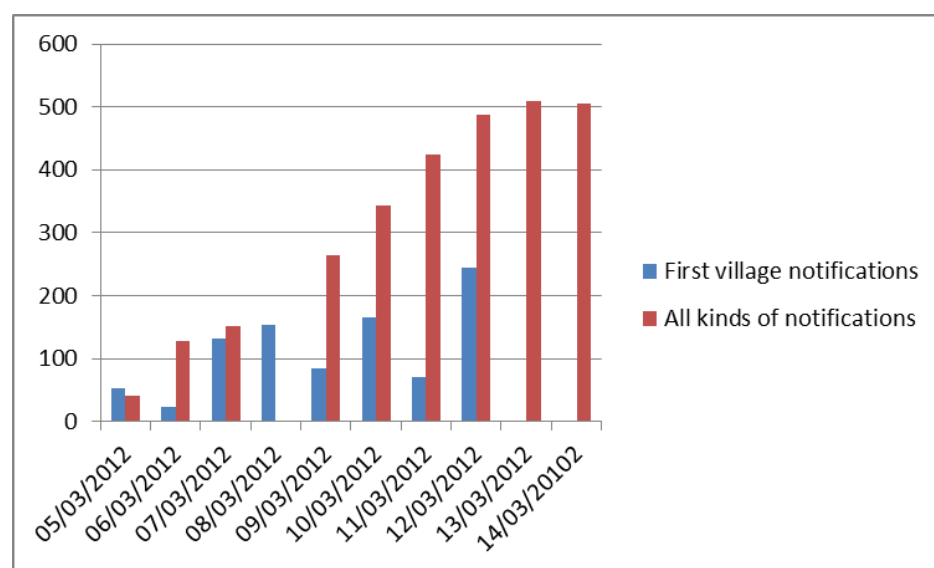
Based on data entered until 12 March 2012, a total of 1844 FMD notifications were submitted from the governorates to the Department of Preventive Medicine at GOVS, originating from 975 different villages (52.8% original notifications), Table 1. On some days, more than 80% of the notifications are repeated notifications.

Most notifications are coming in from the Nile delta. However, also from the Central and Upper region more than 100 notifications were submitted between 5 and 12 March 2012, see Table 2.

When considering the total population of villages per region, the reporting of clinical FMD becomes more equal across all 5 regions in Egypt, see Table 3.

*Table 1. Number of notifications (total and first notifications from villages) submitted to GOVS from the Governorates between 5 and 14 March 2012.*

Date	All kinds of notifications	First village notifications
05/03/2012	41	52
06/03/2012	128	24
07/03/2012	152	132
08/03/2012	0	154
09/03/2012	265	85
10/03/2012	344	165
11/03/2012	425	70
12/03/2012	488	244
13/03/2012	509	.
14/03/20102	506	.



*Table 2. Overview of number of first notifications by day in March, 2012. Totals are slightly different from Table 1 as not for all records, the region could be determined.*

Day in March	Nile Delta	Central	Upper	East	West	Eindtotaal
5	24	17	4	4	2	51
6	17	4	3			24
7	99	10	15	1	5	130
8	86	35	24	6		151
9	69	3	12			84
10	130	20	12	1	1	164
11	101		22		2	125

12	162	40	29	10	1	241
Total	688	129	121	22	11	970

*Table 3. Proportion of villages having reported FMD disease between 5 and 12 March 2012.*

<b>Region</b>	<b>Number of major villages in region</b>	<b>Number of different villages reporting</b>	<b>Proportion of villages reporting FMD problems</b>
Nile Delta	3383	688	20%
Central	1023	129	13%
Upper	646	121	19%
East	164	22	13%
West	49	11	22%
<b>Total</b>	<b>5265</b>	<b>971</b>	<b>18%</b>

It can be concluded that in all Egyptian regions, between 13 and 22% of villages have reported FMD disease. Thus from these data (updated until 12 March) one can no longer hold the idea that certain regions in Egypt are free from FMD or only have limited effects of FMD. It requires a new vaccine strategy based on impact reduction as the "geographic zone/clean area" strategy is now unlikely to work well.

The alternative strategy is best defined when data on notifications are updated AND when sufficient samples from all five regions (with a minimum of 20 samples from different locations per region) have been tested and identified for FMD serotype.

## 5. Recommendations

### Immediate Actions

#### 5.1 Communication to private stakeholders (farmers and livestock keepers)

**Action:** Inform animal owners about:

- a. Current FMD situation
- b. Preventive measures to be taken by each individual animal owner
- c. Vaccination programmes foreseen in the near future

**Objective:** to raise awareness with animal owners on what they can do themselves to prevent infection of their livestock

**Rationale:** For the short term, animal owners are the first to prevent animals to become diseased by taking adequate precautionary measures. Equally, farmers are eligible to know what goes on through knowledgeable sources, different from media scrapings. Lastly, there is a lot of mistrust with animal owners. Through clear and factual information, GOVS and its local staff may build up confidence over time (long term).

**Time for implementation: immediate action**

**Actions required by GOVS:**

- Need for a communication plan, involve extension services, learn the lessons from SAIDR on HPAI messages to farmers
- Disseminate by means of posters, flyers, extension services, television, information days at mosques, markets etc
- Keep messages short and simple, focused on practical measures for the farmers, for example
  - Don't mix your animals with other animals that are sick
  - Don't buy in animals from unknown sources
  - Don't visit neighbours when these have sick animals

- Vaccinate your animals, especially the young ones when this is offered by your veterinarian

**Indicators for monitoring and evaluation:**

- - Production of extension materials, number of meetings with farmers,
- - Proportion of animal owners refusing animals to be vaccinated (drop over time).

## **5.2 Vaccination**

**Action:** Design plan for implementing vaccination campaign. In the short term, there will not be sufficient vaccine available to cover all cattle against SAT2, so decisions must be made about priorities, to reduce the impact of disease.

GOVS reports that commercial farms are protected by privately bought polyvalent vaccines; given this is the case, then reduction of impact on dairy small holders should be a priority. The stated GOVS preference of vaccinating areas with little or no SAT2 may already be impractical due to disease spread.

Preparation for the campaign will involve cold chain maintenance (refrigerated trucks, ice packs), organising teams at governorate and district level, calculating numbers of animals which can be vaccinated per week, assigning responsibility for areas to specified persons, advance communication with farmers and public representatives to inform them of the differences between SAT2 and O&A vaccines and the rationale for the plan, and ensuring vaccination teams carry out biosecurity precautions (gloves, boots, disinfectant).

Selection of vaccine strains will require input and advice from WRL Pirbright and FAO. The vaccine matching results should be available by late March.

Vaccination against type O and A using the current Egyptian bivalent strain should continue, as failure to do so could lead to a severe outbreak.

**Rationale:** For a vaccination campaign to succeed in reducing the impact of disease, a clear plan is necessary. This is also required to convince international partners that supporting vaccination will be worthwhile. Public communication is necessary to improve cooperation and reduce disappointment that some areas cannot be covered due to lack of vaccine.

**When:** Planning can start immediately.



**Indicators for monitoring and evaluation:** Formal vaccination plan created; numbers of vaccines administered per week; numbers of areas covered per week; post-vaccination monitoring.

### 5.3 Biosecurity measures

**Action:** At local veterinary clinic

- a. Use of gloves, boots and disinfectant when treating, vaccinating, bleeding animals
- b. It requires GOVS to distribute materials and provide training and instructions on its use

By central, governorate and district veterinary staff when going out for disease outbreak investigations, vaccination, bleeding or other activities

**Objective :** to reduce transmission of infection through animal – man – animal contact

**Rationale:** veterinary staff must take all precautionary measures to spread infection and have to set the example to farmers

**When:** starting immediately and at all times

**Concrete actions by GOVS:** instruct and train veterinary staff, purchase of materials, distributions of materials

**Indicators for monitoring and evaluation:**

- at local clinic: supervision by veterinary officers from district, governorate and/or central level
- for central, governorate and district staff: random checks by officials

### Actions with medium-term effects

### 5.4 Recording and reporting

**Action:** To record daily numbers of reported and confirmed FMD outbreaks, including location, species and sample details (if applicable). Weekly maps showing the locations of these cases should be generated.

**Rationale:** This will enable GOVS to track the progress of the disease and provide information on the effectiveness of disease control measures.

**When:** Immediately.

**Indicators for monitoring and evaluation:** Weekly summary reports generated, to be sent to Egyptian policy makers, and the FAO.

### 5.5 Sampling for passive surveillance (investigating disease reports)

**Action:** Introduce decentralised collection of samples from suspect FMD animals. This means vets from regional laboratories being trained to collect epithelium and blood from cattle in villages with reported FMD outbreaks. These samples are then packaged in the regional laboratory and sent to AHRI in Cairo for testing.

**Rationale:** It is very inefficient to send someone from AHRI in Cairo to collect samples from outbreaks which may be long distances away (e.g. Upper Egypt). It wastes time and energy, and reduces the number of samples which can be collected.

**When:** Very soon. Collecting blood and epithelium (size of a finger nail, placed in glycerol/PBS buffer) is not difficult.

**Indicators for monitoring and evaluation:** number of regional laboratories authorised to collect samples; number of samples collected by regional laboratories.

### 5.6 Active surveillance plan

**Action:** There are 28 governorates. In each governorate, select three districts which do not border each other (or have the least borders with each other). In each district, select three villages which are not close to each other. An investigation team (two people) visits each selected village, asks about any sick animals, any signs of FMD or sudden death, examines 10 animals, and (if applicable) takes blood and epithelium from any FMD clinical cases. The team visits one village per day, so it will take a two-person team nine days to cover a governorate.

Two months later the exercise is repeated, choosing different districts.

The plan can be revised to introduce random selection of villages and districts and to review sampling numbers subsequently.

**Rationale:** It will enable a more accurate picture of national FMD cases to be obtained. It will be more effective than passive monitoring for detecting new events (such as the SAT2 event). It will create a

culture of structured monitoring. It will aid collection of samples for sequencing and submission to WRL Pirbright.

**When:** This can start very soon; next week it can start in governorate reporting no/few FMD outbreaks.

**Indicators for monitoring and evaluation::** Summary report of the names of villages and districts inspected; dates of inspection; outcomes (no FMD; FMD detected; samples collected; serotype). National summary reports produced every two months.

### **5.7 Selection of areas for passive disease investigation (which reports to follow up)**

**Action:** Investigate reported FMD cases in areas which have few or no other reported FMD outbreaks and sectors (for example sheep and goats, commercial farms) about which little information is known.

**Rationale:** Limited resources should be targeted where they are most needed. If a report of FMD comes in from an area with known SAT2 (for example, Gharbia governorate), there is less of a need to investigate and take samples than for an area with no or few FMD cases.

**When:** Prioritisation can start immediately.

**Indicators for monitoring and evaluation:** Related to recording and reporting of disease (recommendation 4.4); generate maps of locations of reported outbreaks and investigated outbreaks on a weekly basis.

### **5.8 Movement restrictions**

**Action:** Restrict animals being moved from the Nile delta to other areas with lower disease prevalence.

**Objective:** to reduce transmission of infection through animals

**Rationale:** infectious animals are the major source for transmission of infection. Restrictions of animal movement within Nile delta will not be possible and considering that FMD-SAT2 has been reported from most of the Nile delta governorates, there is no point in restriction of animals moving between these governorates.

**When:** starting immediately and at all times, until areas which currently have low SAT2 prevalence are covered by vaccination.

**Concrete actions by GOVS:**

- Establish and enforce checkpoint on high ways between Nile delta and Upper Egypt. This involves collaboration with Ministry of Justice, Police, Ministry of local development etc.
- Value chain analysis to learn about drivers for animals being transported across Egypt (stakeholders, economic incentives, demand and supply by different sectors)

**Indicators for monitoring and evaluation:** at checkpoints: random checks by officials

## 5.9 Animal markets

**Action:** Closure of animal market for the duration that a FMD-SAT2 vaccination campaign is on its way

**Objective:** to reduce transmission of infection through animals

**Rationale:** animal markets are places where great numbers of animal are concentrated and where there is a lot of animal-animal, animal-people and animal-material contacts. In the Egyptian context, purchased (and unsold) animals are taken home without further precautionary measures such as isolation.

**When:** keep markets closed while the FMD-SAT2 vaccination campaign is pending. Subsequently, local animal markets may be opened up subject to sufficient disease control and vaccination coverage.

### **Concrete actions by GOVS:**

- Enforce non-trading of cattle and buffalos across Egypt. This involves collaboration with Ministry of Justice, Police, Ministry of local development etc.
- Compile information on the location, volume, day of trading of animal markets. Study into the origin and destination of traded animals
- Value chain analysis, see with animal movement restrictions

### **Indicators for monitoring and evaluation:**

- At animal markets and around villages: random checks by officials from governorate and/or districts

## 5.10 Communication to decision makers

GOVS should be regarded as the most reliable and knowledgeable source of information on animal disease and disease control. This requires procedures within its organisation on who, what, when and

how information is shared with decision makers.

### **5.11 Organization of FMD control, at central and local level**

**Action:** Establish a FMD task force with staff from Preventive Medicine, Epidemiology, AHRI, Extension services, and/or animal production.

**Objective:** to further develop FMD control strategies and to safeguard its implementation and adaptation through monitoring and evaluation

**Rationale:** current FMD control is scattered across different departments within and outside GOVS. There is a lack of coherence and even ignorance of what actions are taken by whom. A multi-disciplinary team of veterinary specialists is required to develop an overall FMD control strategy and to consider possible pitfalls for its implementation.

**When:** immediate action

#### **Concrete actions by GOVS:**

- Facilitate the establishing of the FMD task force by providing the terms of reference, job descriptions and means to operate.

#### **Indicators for monitoring and evaluation:**

- A FMD control strategy is developed within 2 months. Information required is collated and interpreted and provided in the annexes.
- Defined activities for implementation are written for veterinary staff in governorate, district and at local clinics.

Dr Chris Bartels and Dr Eoin Ryan

21<sup>st</sup> March 2012

## 6 Annexes

### 6.1 TORs for Mission team

The terms of reference for the EUFMD/FAO mission were:

- To advise GOVS on immediate actions for disease control
- To collect information on the situation and provide this to the FAO, to assist the identification of supportive actions

### 6.2 Key persons contacted – to be completed

Name	Position	Location
Dr Osama Selim	Chief Veterinary Officer	GOVS
Dr Soheir	Undersecretary of Preventive Medicine	GOVS
Dr Iman Farag	Senior Veterinary expert – Dpt of Preventive Medicine	GOVS
Dr Ahmed Hany	Head of Department of Epidemiology	GOVS
Dr Amaal Ibrahim	Epidemiologist – Dpt of Epidemiology	GOVS
Dr Rehab	Veterinary expert – Dpt of Preventive Medicine	GOVS
Dr Shams	Veterinary expert – Dpt of Preventive Medicine	GOVS
Dr Mohamed Galal Aggour	Director	AHRI
Dr Abdel Satar Arafa	Senior Virology Researcher and Head of Gene	AHRI
Mohamed	Analysis Unit	
Dr Mustafa		AHRI
Dr Hanaa Ahmed	Senior Researcher, Biotechnology Unit	AHRI
Dr Ahmed Habashi	Senior Researcher, Immunology Unit	AHRI
Dr Toni Ettel	Program operations officer	FAO-ECTAD
Dr Yilma Yobri	ECTAD Team Leader	FAO-ECTAD
Dr Markos Tibbo	Animal Health expert	FAO-ECTAD

### 6.3 Mission itinerary:

Date	Activity
Monday 12 <sup>th</sup>	Meetings with Dr Soheir and Dr Osama Selim; discussions with GOVS staff from Epidemiology and Preventive Medicine Divisions
Tuesday 13 <sup>th</sup>	Travel to Tanta in Gharbia Governorate; meeting with veterinary director for Governorate and his epidemiology staff. Travel to Kafr Sebtas veterinary clinic; discussions with veterinary staff and district epidemiologist. Visited local livestock market (not in use). Visited local village (Kafr Sebtas), inspected many cases of FMD. Meeting with FAO staff based in Cairo.
Wednesday 14 <sup>th</sup>	Meeting with Dr Soheir. Discussions with GOVS staff. Visit to AHRI and meeting with staff, including discussion of laboratory results. Meeting with Dr Osama Selim and Cairo FAO staff. Further discussions with GOVS staff.
Thursday 15 <sup>th</sup>	Meeting with Dr Soheir and discussions with GOVS staff. Meeting with Dr Osama Selim and Dr Soheir. Teleconference with FAO HQ. Further discussions with GOVS staff.