Foot-and-Mouth Disease situation

Food and Agriculture Organization of the United Nations

Monthly Report

July 2012

Information sources used:

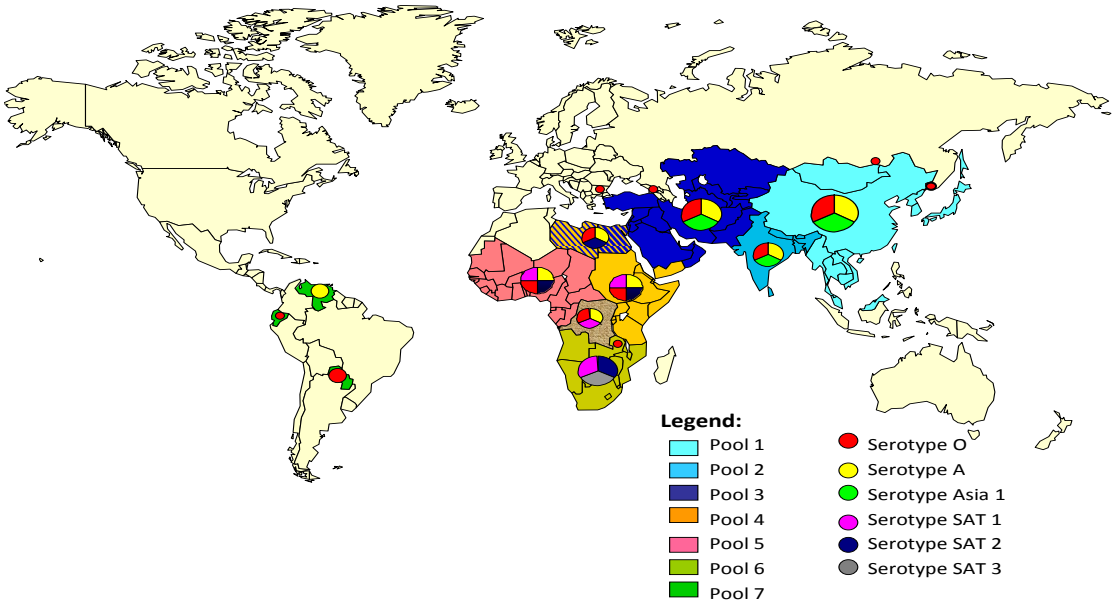
Databases:
Emergency Prevention System-Animal Health/Global Early Warning System (EMPRES-AH/GLEWS)
FAO EMPRES-i Global Animal Disease Information System
FAO World Reference Laboratory for FMD (WRLFMD)
OIE WAHID World Animal Health Information Database

Other sources:
FAO/EuFMD supported FMD networks (EARLN-FMD Eastern Africa, RESOLAB-FMD West Africa, West Eurasian Laboratory Network)
FAO/EuFMD projects and field officers
Crisis Management Centre-Animal Health (CMC-AH)

Review process:
This report (in draft) was circulated for comment to focal points of the FAO Reference Centres for FMD (including Centres in process of recognition) and OIE Reference laboratories for FMD.
The following are thanked for their comments:

*Please note that the use of information and boundaries of territories should **not** be considered to be the view of the U.N. Please always refer to the OIE for official information on reported outbreaks and country status.*

Foot-and-mouth disease (FMD) distribution by Serotype and the seven virus pools, 2010-2012



HEADLINE NEWS

Pool 3: *(see page 8)*

- **Egypt**[3] - during the month of June 2012, 149 notifications of new FMD outbreaks originating from seven governates (out of 27 governates) were recorded. This is an increase from the 83 notifications in May 2012.
- **Iran**[3] - increased detection of serotype A.
- **Kazakhstan**[1] – Two new outbreaks have been reported in the east of the country at the end of June.
- **Turkey**[3] – continued circulation of serotypes Asia 1 and A, causing many outbreaks, in addition a new serotype O virus has recently been detected – PanAsia-2 [FAR-09].

Pool 4: *(see page 13)*

- **Burundi**[7] - four outbreaks were reported in June 2012.
- **Ethiopia**[7] – further outbreaks of type O in Amhara/Tigray Regions. Genotyping by the WRL showed one of the detected viruses was very closely related (99.37% similarity) to the type O recently detected in Libya.
- **Kenya**[4] - serotypes O SAT 1 and SAT 2 isolated.
- **Tanzania**[7] - 24 outbreaks reported for the period January to July 2012.
- **Uganda**[7] – 11 outbreaks reported in the first six months of 2012

Pool 7: *(see page 21)*

- No outbreaks have been reported in 2012 in Pool 7.

The following was reported in the WRLFMD Quarterly Report April-June 2012; (reports for individual countries are included in the relevant FMD Pool).

Vaccine Matching[4]: 1st April 2012 to 30th June 2012 by VNT.

Serotype O – Seven of the eight samples which were analyzed gave results that suggested that there is a close relationship between the field isolate and one or more vaccine strains (r_1 => 0.3). In other words one or more of the three vaccine strains match well with the field strain and a potent vaccine containing the relevant vaccine strain is likely to confer protection.

The eighth sample, which was taken from a pig in Viet Nam in 2012, matched poorly with the three vaccine strains O 4625, O Manisa and O Tur 5/09. Genotyping suggests that the two PanAsia topotypes detected in east Kazakhstan are genetically similar to this Viet Nam 2012 virus.

Serotype A – All seven of the field strains submitted for vaccine matching gave results that suggested a close enough relationship between the field isolates and available vaccines so that a potent vaccine containing the appropriate vaccine strain is likely to confer protection.

Serotype Asia 1 – Six field isolates (two each from Pakistan, Iran and Turkey) matched poorly with vaccine strain Asia 1 IND 8/79.

Two of the samples tested (PAK 91/2011 and TUR 2/2012) gave results suggesting a close relationship between these field isolates and the vaccine strain Asia 1 Shamir, so that a potent vaccine containing Asia 1 Shamir is likely to confer protection.

Only two of the samples (TUR 2/2012 and TUR 65/2011) were matched against Asia 1 Tur 11 and the result indicated that a potent vaccine containing Asia 1 Tur 11 is likely to confer protection against both these viruses.

Serotype SAT 2 – Eight field isolates were examined.

The two Libyan isolates showed a poor match with the two vaccine strains SAT 2 Eritrea and SAT 2 ZIM.

The results for the remainder of the SAT 2 isolates (Tanzania, Bahrain, Egypt and Palestine Autonomous Territories) matched with SAT 2 Eritrea.

Samples tested at WRL : 1st April 2012 to 30th June 2012.

Nine countries submitted 237 samples – 26 serotype O, 22 serotype A, 12 SAT 2 and one SAT 1 were identified.

Pool 1. CENTRAL / EAST ASIA

Country	Data WRL FMD[4] 2011/ 2012	Data from field officers[3] 2011/ 2012	Reported serotype/outbreaks in OIE 2012[1]		Reported serotype/outbreaks in OIE 2011[1]	
			Serotype	No of outbreaks	Serotype	No of outbreaks
Cambodia	O					94
China (People's Rep. of)			O	1	O	8
China (Hong Kong, SAR)	O		FMDV Genome detected.		No information available .	
China (Taiwan Province)			O	12	O	12
Japan					Reported as absent.	
Korea (DPR)	O				O	114
Korea (Rep. of)	O				O	155?
Lao PDR	O				No information available .	
Malaysia	O				O, A	28
Mongolia					No new outbreaks in 2011 and 2010, event resolved 01/09/2011	
Myanmar					23/03/2011 – report confirming no new outbreaks	
Russian Federation			O	2	O	1
Thailand	A				O, A	31
Viet Nam	O				O	449

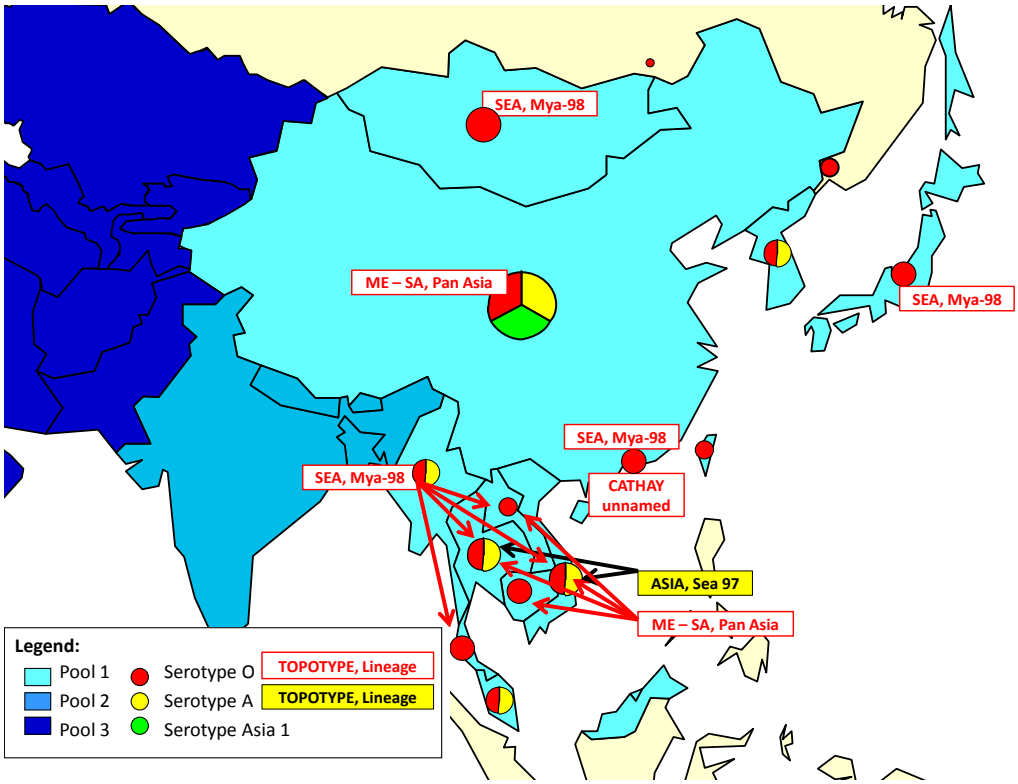
New events in Pool 1

- **Thailand**[4] - Four FMD type O and 19 type A viruses were isolated from a batch of 24 samples received from Thailand in June 2012 (collected in 2011 and 2012). Two type O viruses belonged to the ME-SA/PanAsia lineage while the other two belonged to the SEA/Mya-98 lineage. All 19 type A viruses belonged to the ASIA/Sea-97 lineage.

Significant events in Pool 1 from previous months.

- **Malaysia**[4] - serotype O has been reported in Negeri Sembilan which is about 100km south east of Kuala Lumpur. The species affected is cattle. FMD viruses known to be circulating in Malaysia are O/SEA/Mya-98 and A/ASIA/Sea-97.
- **Thailand**[10] - June 27- 29 2012 FAO/OIE Global Conference on Foot and Mouth Disease Control was held in Bangkok:
  Tritsadee Chaosuancharoen, Director-General, Department of Livestock Development in Thailand confirmed that the national FMD plan has moved from control to eradication; the key activities for the establishment of an FMD Free Zone (with vaccination) in Eastern Thailand were outlined.
  It was reported that in the period January to June 2012 there were 12 outbreaks of FMD.

FMD distribution in Pool 1 by serotypes 2010 - 2012



Pool 2. SOUTH ASIA

Country	Data WRL FMD[4] 2011	FMD Conference New Dehli February 2012	Reported serotype/outbreaks in OIE 2012 (immediate notifications)[1]		Reported serotype/outbreaks in OIE 2011	
			Serotype	No of outbreaks	Sero type	
Bangladesh		FMD endemic			Disease present but without quantitative data	
Bhutan		FMD endemic				
India		O, A, Asia 1			O, Asia 1	439
Nepal		2011 ~873 outbreaks (O, A, Asia 1)			O, Asia 1	72
Sri Lanka	O				O	6

New events in Pool 2

- None have been reported.

Significant events in Pool 2 from previous months, including those presented at the Conference on Scientific Developments and Technical Challenges in the Progressive Control of FMD in South Asia (13-15 February 2012, New Delhi, India)[10].

- **Bangladesh[10] -** FMD is reported as endemic in the country and the major risk factors to FMD entering and spreading in the country are reported as being unregulated movement of livestock and products across international borders and within the country, nomadic pig herds and high animal and human density.
  It is reported that Serotype O is the dominant strain, followed by serotype A with Asia reported to have been found recently.
- **Bhutan[10]** - about 60% of the population in Bhutan is reported to depend on livestock farming.
  FMD is endemic in Bhutan – cattle are the main species affected and serotype O is the dominant serotype.
  Vaccination is carried out on a risk based approach, the aim being to have a minimum 80% coverage. Trivalent vaccine (O, A, Asia 1) is used both for prophylactic vaccination (bi-annual or annual) and post-outbreak.
- **India[10]** - Three serotypes of FMD* have been detected as currently circulating in India – in terms of numbers of outbreaks caused, serotype O dominates, followed by serotype A and then serotype Asia 1.

India continued.....

Serotype O - there are three sub-lineages of FMD virus type O co-circulating in India – Ind2001, PanAsia and PanAsia-2, with Ind2001 being detected most frequently.

Serotype Asia 1 - of the three lineages B, C and D (Indian nomenclature) that have been found in India, only lineage C has been detected since 2005.

Serotype A – there was exclusive dominance of genotype 18 (VII).

*nomenclature is as reported in the India presentations at the New Delhi Conference, February 2012.

Outbreaks occur throughout the year, with more outbreaks occurring at the end of the monsoon and in the post monsoon period (August to November).

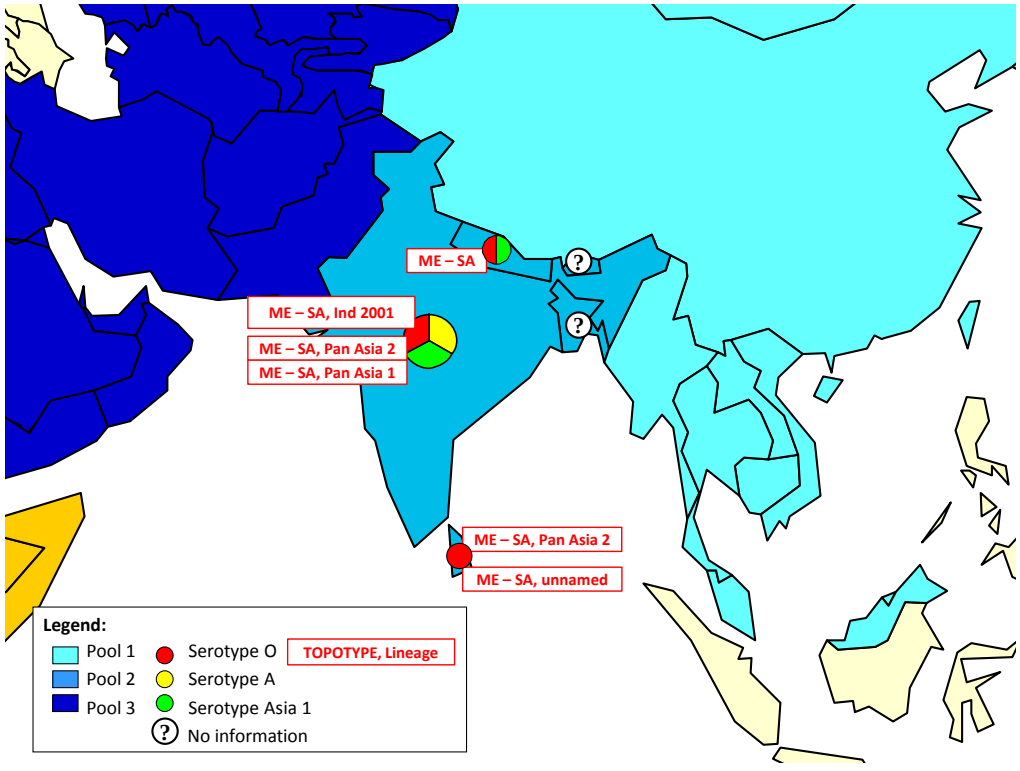
The disease is controlled mostly by vaccination and constant surveillance and monitoring.

The table below illustrates the number of reported cases of FMD for the period 2006-2011:

Year	No. of outbreaks reported	No. of outbreaks investigated	Serotype O	Serotype A	Serotype Asia 1
2006-07	1467	1210	748	141	321
2007-08	1211	842	721	65	56
2008-09	511	241	198	19	24
2009-10	799	610	568	33	09
2010-11	253	180	154	10	16
Total	4241	3083	2389	268	426

- **Nepal**[10] – FMD is endemic in Nepal. Between 2001 and 2010 about 873 outbreaks per year have been reported, causing substantial economic loss to the livestock industry.
  For the period 2001-2010 the most prevalent serotype detected was O (82%), followed by Asia 1 (15%) and then serotype A (3%). Serotyping has been done in 65 of the 75 districts in Nepal.

FMD distribution in Pool 2 by serotypes 2010 - 2012



Pool 3: WEST EURASIA & MIDDLE EAST

Country	Data WRL FMD[4] 2011/ 2012	Data from field officers[3] 2011/ 2012	Reported serotype/outbreaks in OIE 2012[1]		Reported serotype/outbreaks in OIE 2011[1]	
			Serotype	No of outbreaks	Serotype	No of outbreaks
Afghanistan	A, O, Asia 1				A, O, Asia 1	294
Armenia		No outbreaks 2012				Reported as Absent.
Azerbaijan						Reported as Absent.
Bahrain	A, O, Asia 1		(SAT 2)*	(1)*		33
Bulgaria	O				O	11
Egypt	A, O, SAT 2	3305 OB 05/03/12-30/06/2012	SAT 2	43		Reported as Absent.
Georgia		No outbreaks 2012				Reported as Absent.
Iran	O, A, Asia 1	O, A, Asia 1			O, A, Asia 1	2053
Iraq					No information available .	
Israel	O		O	2	O	16
Jordan					Disease absent	
Kazakhstan	O, A		O, A	8	O, A	11
Kuwait	O				O	3
Kyrgyzstan	A	A,O** 2012 - 33 outbreaks			A, O	66
Lebanon						Reported as Absent.
Libya	O		O, A, SAT 2	24	Disease present but without quantitative data	
Oman					O	122
Pakistan	O, A, Asia 1				Disease present but without quantitative data	
Palestine Autonomous Territories	SAT 2		O SAT 2	2	A, O	126
Qatar					O	20
Saudi Arabia					Disease present but without quantitative data	
Syrian Arab Republic						
Tajikistan					ASIA 1	1
Turkey	O, A Asia 1	O, A Asia 1		O, Asia 1	O, A Asia 1	1045
Turkmenistan					No Details submitted	
Uzbekistan					No Details submitted	

( )* - *identified in the quarantine centre* **State Veterinary Department.*

New events in Pool 3

- **Egypt**[3] - 149 villages (in seven governates) reported clinical FMD for the first time in June 2012, compared to 83 (eight governates) in May 2012 and 553 (24 governates) in April 2012. This brings the number of first time notifications of FMD, from the first recording on 5th March 2012 to 3305.

  Emergency vaccination with monovalent SAT 2 commenced in April 2012 in nine governorates that had few or no FMD notifications, and this was later extended to include farms and villages where FMD has not been notified. Booster vaccination has now commenced in six governates. Between 19th April and 7th July 2012 more than 5 million animals were vaccinated with locally produced SAT 2 monovalent vaccine (first dose) and over 50,000 have received their booster dose. In addition some commercial farms have used monovalent SAT 2 vaccine imported from Botswana.

  Biosecurity measures have also reportedly been implemented and cold chain procedures for vaccines are reportedly closely monitored.

  A working group has continued to design a socio-economic impact study of FMD in livestock in Egyptian smallholders.

  Training for field outbreak investigation and vaccination monitoring provided by the EuFMD was attended in Cyprus in June 2012, and also in June representatives from Egypt FMD attended the FAO/OIE Global conference in Bangkok.
- **Iran**[3] – Serotype A was detected in 31 of 50 positive samples tested in July 2012. The lineages of serotype A known to be circulating in Iran are A Iran-05^{SIS-10} and A Iran-05^{Her-10}.

  The other FMD viruses currently circulating in Iran include Asia 1 ASIA Sindh-08, O ME-SA PanAsia-2^{FAR-09} and O ME-SA PanAsia-2^{ANT-10}. Asia 1 was first detected in early 2011, likely spreading from Pakistan into Iran.

  Since the surge of FMD in 2010 caused by serotype O PanAsia-2 the number of reported clinical cases of FMD has fluctuated between 100-200 cases per month
- **Kazakhstan**[1] – two new outbreaks have been reported in east Kazakhstan at the end of June. Sheep and cattle were affected, with the cattle showing a morbidity of 69.33% and the sheep 3.28%. In 2011 O PanAsia was found in this area of the country.
- **Kyrgyzstan**[3] - The State Veterinary Department (SVD) has reported 33 outbreaks so far in 2012 (65 outbreaks were reported by the SVD in 2011). The central laboratory reports that most of the outbreaks are due to serotype O and some due to serotype A. SVD states that 4000 cattle that allegedly died from FMD earlier in 2012 actually died of malnutrition, exacerbated by a severe winter.

  Serosurveys in 2011 found that non structural proteins (NSP) were found in 55% of the sera tested - 731 sera from 1,338 were NSP positive. Testing of sera from this year is still ongoing but currently results for the southern region indicate a similar incidence of NSP.

  In spring 2011 all cattle were vaccinated with a trivalent vaccine, (O PanAsia 1, A22 Iraq and Asia 1 Shamir), imported from India.

  In autumn 2011 there was no vaccination.

  It is reported that from March 2012 to April 2012 356,000 young cattle were vaccinated against FMD with a vaccine imported from Vladimir, Russia (O PanAsia-2, A Iran-05 and Asia 1 Shamir). For the latter half of 2012 946,000 doses of trivalent vaccine have been purchased from Vladimir and another 930,000 doses of vaccine from India

***Pakistan**[10] - currently three serotypes are known to be circulating in the country: A, O and Asia 1. From genetic characterization 1997-2009 serotype O was detected in 99 isolates, closely followed by serotype A (86 isolates). The third serotype known to be circulating is serotype Asia 1 (47 isolates).

Serotype O - reported as being responsible for a significantly higher number of outbreaks than the other two serotypes.

Serotype A – two genotypes and seven sub-lineages are known to be in circulation. Recent isolates match poorly with vaccine strain A22 and match better with A/TUR/06.

Serotype Asia 1 – until 2005 two genetic groups of this serotype were known to be circulation in the country – Group-I and Group-VI. In 2011 a new genetic group was found to be in circulation – Group-VII.

*virus nomenclature is as reported in the Pakistan presentation at the New Delhii Conference in February 2012.

- **Trans-Caucasian Countries**[3] **(TCC) – Armenia, Azerbaijan and Georgia**
  No FMD outbreaks have been reported in the TCC region in 2012.
- **Armenia** – the spring vaccination campaign was completed in June 2012 and an autumn revaccination campaign will start in the third quarter of 2012.
- **Azerbaijan** – the spring vaccination campaign was completed in June 2012. More vaccination is planned for the autumn.
- **Georgia** - it is reported that one million doses of trivalent vaccine has been purchased from Merial, containing vaccine strains O Manisa, O 3039, A Iran-05 and Asia 1 Shamir. This will be used to vaccinate all cattle in the autumn. Previously vaccination was mainly carried out in high risk border areas and around large livestock markets.
- **Turkey**[3] – FMD is endemic in the Anatolian region of Turkey with serotypes O, A and Asia 1. **821 outbreaks have so far been reported in 2012 in Anatolia.** Serotypes detected in outbreaks in 2012 are as follows: O 81, A 125, ASIA 1 498, unidentified 117.

  Serotype Asia 1 has been causing major outbreaks. Asia 1 has recently been detected in outbreaks in the west of Anatolia (Egean and Marmara regions) and some part of inner Anatolia.

  Serotype A was isolated in a significant number of outbreaks in 2011 and early 2012. More recently it seems to be in a limited area in inner Anatolia and Black Sea regions, with A IRAN-05^{SIS-10} being identified in around 60% of the type A sera in 2012. One local lineage of A Iran-05^{USK-11} has emerged in 2012. An incursion by A Iran-05^{HER-10} has only been isolated from one outbreak.

  Serotype O caused a large number of outbreaks in 2010 and the beginning of 2011, the latter part of 2011 saw a reduction in reporting that has continued into 2012, however a new sub-lineage, O PanAsia-2^{FAR-09}, has recently been detected in Turkey accounting for 23 of the 25 O isolates in 2012.

  Current vaccine strains used in Turkey are following:

  For serotype O: O TUR 07 since 2010
  For serotype A: A TUR 06 since 2008
  For serotype Asia 1: Asia 1 TUR 11

Turkey continued.....

Vaccination Policy

Up to second half of 2011, the vaccination campaign aimed to vaccinate 100% large ruminants (LR) twice a year and small ruminants (SR) once a year (SR according to available

vaccine). However, in 2012 not enough vaccine was supplied to achieve the 2011 levels of vaccination. Therefore, a strategic vaccination policy was used in spring 2012 according to risk assessment and vaccine availability. East and south east Anatolia border areas and Thrace region (in the west) were to have 100% coverage of livestock by vaccination while in the rest of Turkey emergency vaccination and ring vaccination was used in the protection and surveillance zone of outbreaks.

Autumn Vaccination Policy for Turkey:

Strategic vaccination policy will be used again in the autumn vaccination campaign in Turkey.

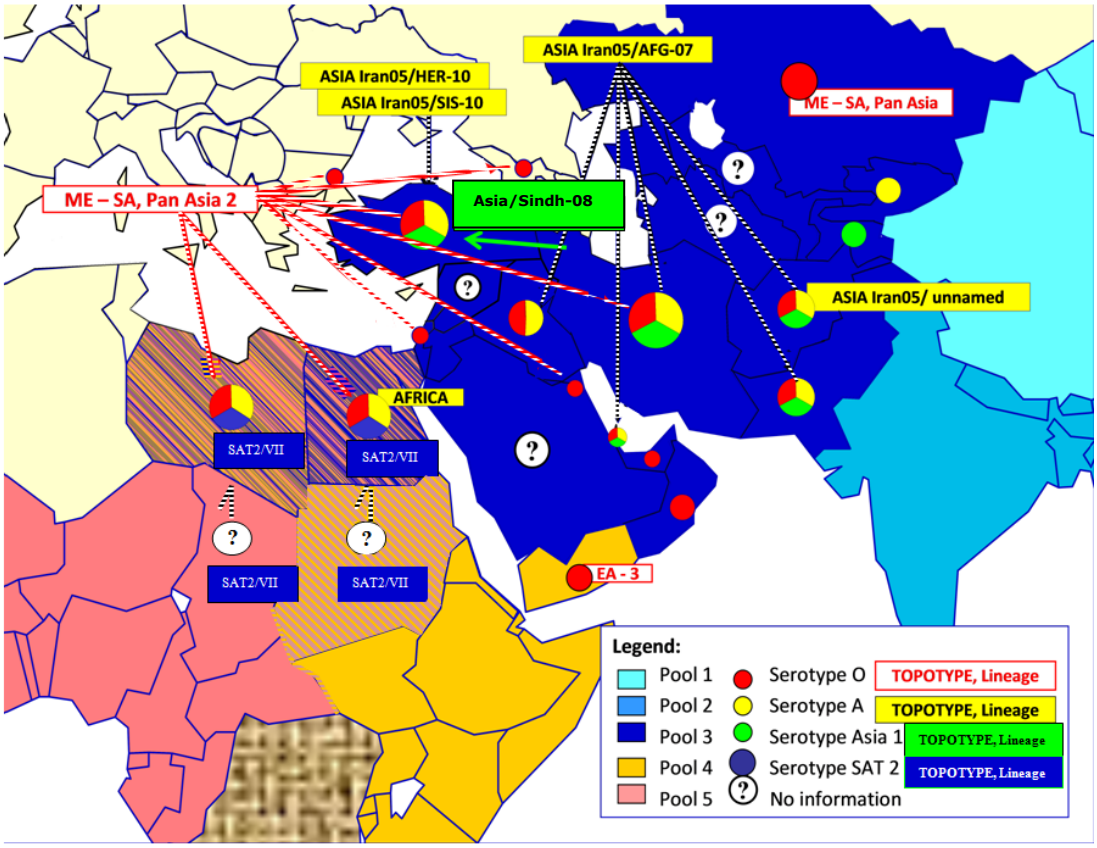
According to risk assessments, Egaen and Marmara regions have not been adequately vaccinated and will therefore be included in the autumn vaccination campaign in addition to eastern border and Thrace regions. (See map below).

In the rest of Turkey emergency vaccination and ring vaccination will be used in the protection and surveillance zones of outbreaks.

Significant events in Pool 3 from previous months

- **Afghanistan**[4] – two isolates of serotype Asia 1 were sent to the WRL for vaccine matching in February 2012. The results suggest that a potent vaccine containing the vaccine strain Asia 1 Shamir (bvs1-5/12 6pd50) is likely to confer protection.
- **Egypt**[4] **and Libya**[4] – serotype O topotype EA-3 has been confirmed by WRL in samples taken in April 2012 – the EA-3 topotype is sub-Saharan and has not been detected in either Egypt or Libya previously.
- **Kazakhstan**[4] – of seven samples (sampled 2010-2012) and submitted to WRL for analysis in 2012, six were serotype O and one was serotype A. Two O ME-SA PanAsia isolates from cattle were closely related to Vietnamese 2011 isolates. The Viet Nam strains showed poor matching with the three vaccine strains tested at WRL.
- **Kyrgystan**[4] - one sample taken in November 2011 was A Iran-05^{HER-10}. This is 98.9% identical to the A serotype found in a sample from Kazakhstan taken in February 2012.

Pool 3. FMD distribution by serotypes 2010 – 2012



Pool 4. EAST AFRICA

Country	Data WRL FMD[4] 2011/ 2012	Data from field officers[3]/ EARLN[8] 2011/12	Reported serotype/outbreaks in OIE 2012[1]*		Reported serotype/outbreaks in OIE 2011[1]*	
			Serotype	No of outbreaks	Serotype	No of outbreaks
Burundi		O A SAT 1 SAT 2[8] Four outbreaks			No details submitted.	
Comoros					Disease suspected but not confirmed.	
Congo D. R.	A				O, A, SAT 1	3
Djibouti						Reported as Absent.
Egypt	O, A SAT 2	A, O SAT 2	SAT 2	49		Reported as Absent
Eritrea					No details submitted.	
Ethiopia	O	O, A SAT 1[8]			A, SAT 1, SAT 2, O	15
Kenya	O	O, SAT 1, SAT 2[8]			O, SAT 1 SAT 2	60
Libya	O		O, A, SAT 2	37	No details submitted.	
Rwanda		Reported as absent[8]			No details submitted.	
Somalia		No data available[8]				7
North Sudan		No confirmed outbreaks 2012				9
South Sudan		O, SAT 1, SAT 2, A				
Tanzania	SAT 2	SAT 1 in buffalo SAT 2 in cattle O			SAT 2 SAT 3	14
Uganda	12 outbreaks in 2012	O[3] A[8] SAT 1 SAT 2 SAT 3			O	15
Yemen					No details submitted.	

New events in Pool 4

- **Burundi**[7] – four outbreaks of FMD were reported in June 2012. The epidemiological unit for these outbreaks is a commune containing around 62 households that graze their animals together near the Ruvubu National Park where there is the possibility of contact with wildlife.
- **Democratic Republic of Congo**[7] - The Veterinary Laboratory in Goma, DRC continues to report FMD the east of the country, close to its eastern borders, in South Kivu province. In July ten kraals (epidemiological units consisting of a village plus associated pasture) reported FMD and this has been recorded as ten outbreaks of FMD. The affected are kraals reported to be between six and 20 kms apart.

  FMD has unofficially been reported in an additional ten localities.

  In those areas where FMD has officially been recorded the morbidity is medium to high and there is some mortality in young animals. High morbidity (75-90%) is seen in those animals that have not previously been exposed to FMD. Where animals have had previous exposure the morbidity tends to be lower. Some of the affected animals had been vaccinated (where farmers have the means they use tri or quadrivalent vaccines from Kenya - Sat 1, SAT 2, SAT 3, A and O serotypes).

  Livestock movements are difficult to control both within DRC and with its neighbours – the international borders are porous, with trans border movements of livestock and herdsmen regularly observed; additionally movement control within Eastern Congo is difficult because of recurring unrest in this part of Congo.

  The serotypes are currently unknown, but results of seven samples taken in the locality of the latest outbreaks in 2011 were all serotype A topotype AFRICA lineage G-1. The most similar isolates outside of Congo are viruses detected in Kenya and Tanzania. In 2010 serotype O topotype EA-2 was reported in similar locations in DRC (all WRL typing).

  It is reported that farmers isolate infected animals, treat them with antibiotics and disinfect using sodium carbonate. Where farmers have the means they use vaccines from Kenya (Sat 1, SAT 2, SAT 3, A and O serotypes).
- **Eritrea**[7] – Samples collected from outbreaks between October 2011 and February 2012 were shipped to WRLFMD in July. The dispatch of the samples was arranged by the EuFMD/FAO EMPRES shipping service and EuFMD covered the shipping costs.
- **Ethiopia**[4+7] - Type O FMD, topotype EA-3 was detected in several samples submitted to the WRL which were collected in 2012 in the Tigray and Amhara regions in the north east of the country. One of the isolates is very closely related (99.37% similarity) to the type O virus detected recently in Libya (O/Lib/54/2012). This important finding sheds light on the possible origins of the sub-Saharan FMD incursions into Libya. The other isolates from Tigray region are most closely related to previous Ethiopian isolates and Sudan in 2008. The Amhara isolates are most closely related to previous isolates in Ethiopia. Two of the four outbreaks reported in July in Tigray/Amhara have been noted as unusual because they have occurred in animals that have either recently recovered from FMD, or that have been vaccinated for FMD.
- **Kenya**[7] - six FMD type O, one type SAT 1 and six type SAT 2 viruses were isolated from a batch of samples received from Kenya by the WRL on 29 June 2012. Other samples from the same batch typed as SAT 2, but no virus was isolated in cell culture and the VP1 RT-PCR was negative. All six type O viruses belonged to the EA-2 topotype, the SAT 1 virus belonged to topotype I and the six SAT 2 viruses belonged to topotype IV. All these topotypes are endemic in Kenya. Vaccine matching of field SAT 1 Ken 2/11 against vaccine

strain SAT 1 Rho gave an r_1 value of 0.05. An r_1 value =<0.3 suggests that the field strain is so different from the vaccine strain that the vaccine is unlikely to protect. The significance of this still has to be confirmed.

- **Republic of Sudan**[7] - 25 samples collected between the end of 2009 and the end of 2011 have been dispatched to WRLFMD on the 25th of July 2012. Some of the samples were serotyped at the Veterinary Research Institute (VRI) Khartoum-Sudan prior to dispatch and three serotype SAT 2 and five serotype O were detected.
- **Tanzania**[7] - there have been 24 outbreaks reported in 2012 to the end of July, that have been included in the epidemiology unit database. Serotyping by the lab in Tanzania indicates that SAT 1 and SAT 2 are circulating.

  In addition outbreaks are believed to have occurred in the following areas in June and July 2012, but have not been included in the database – these are described below:

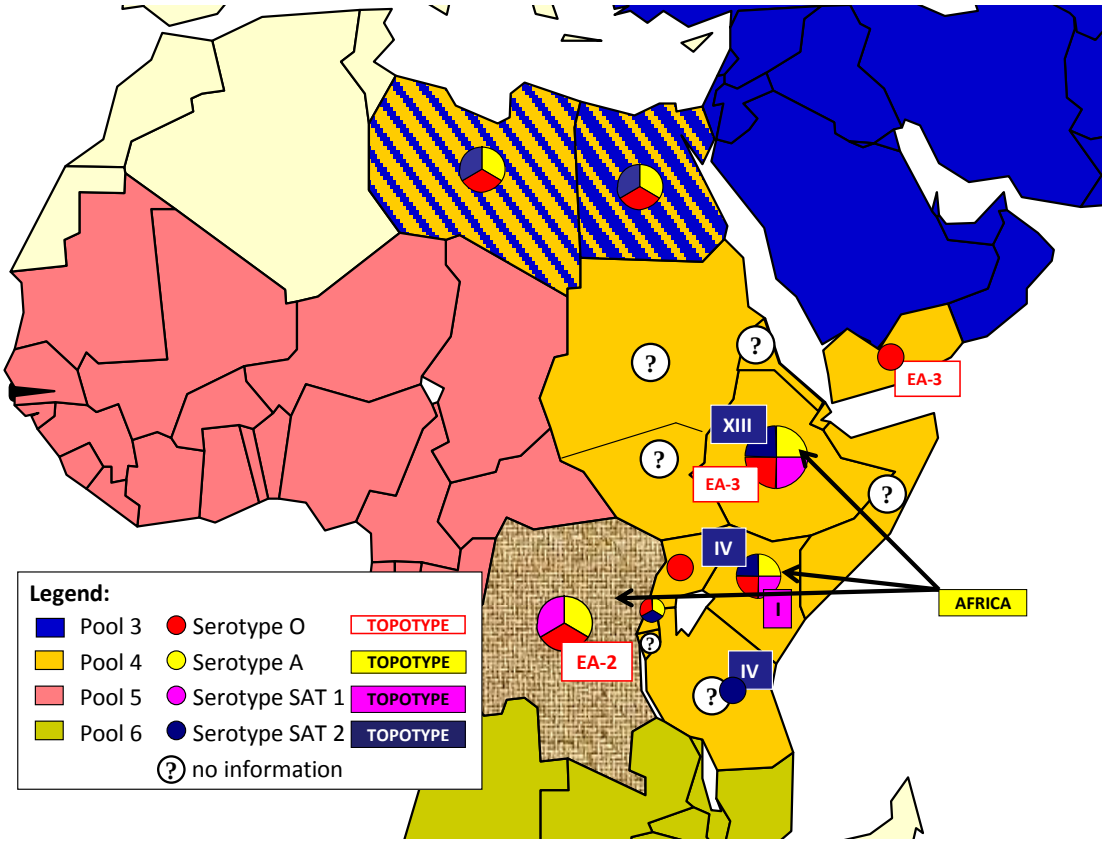
  North Zone - a reported outbreak in Nkinga district is suspected to have originated from Korogwe district. It is planned to take probang samples and to do a more detailed investigation to see if the infection originated in Korogwe.

  Lake Zone - there have been a series of reported outbreaks in this zone which is bordered by Burundi, Rwanda, Uganda, Lake Victoria and Kenya. There is plenty of good grazing in this area which attracts herders from the bordering countries and the borders are porous. There is a lot in interaction between the people from Burundi, Rwanda and Uganda who come to live in Tanzania. The main cattle breed in this area of Tanzania is Zebu which are owned by Tanzanians. However the Tanzanians have been buying Ankole cattle, mainly from Uganda and it is the Ankole that seem more susceptible to FMD. In the Lake Zone Buringi National Park is a sanctuary for those wild animal species that are known to be susceptible to FMD, but their role in the epidemiology of FMD is not known.

  East Zone - one district (Mvomero in Mongoro region) has reported FMD outbreaks in July. No specimens have been collected.

  Other reports from the field suggest that FMD is common in the east coast region, especially Bagamoyo district which is right on the east coast, level with Zanzibar - the disease tends to occur between May and July and this year at least four outbreaks have been heard of in June and July.
- **Uganda**[7] – A total of 11 FMD outbreaks have been reported as being notified in 2012 to the end of June 2012.

Pool 4: FMD distribution by serotypes 2010 – 2012



Pool 5. WEST AFRICA

Country	Data RESOLAB 2011/ 2012	Serotypes reported from RESOLAB 2011/12	Reported serotype/outbreaks in OIE 2012[1]*		Reported serotype/outbreaks in OIE 2011[1]*	
			Sero type	Nb of outbreaks	Serotype	No of outbreaks
Benin		A, SAT 1 O, SAT 2			A, O, SAT 1, SAT 2	59
Burkina Faso		A, O, SAT 2				161
Cameroon	11 outbreaks 2012	A, O, SAT 2				35
Cape Verde					No details submitted	
Central Afr. Rep.					No details submitted	
Chad		A, SAT 1			No details submitted	
Congo D. R.	O,A	A, SAT 1			O,A, SAT 1	3
Congo R.					No details submitted	
Cote d'ívoire		A, O, SAT 2			SAT 1, A	13
Equatorial Guinea						Disease suspected but not confirmed.
Gabon						Reported as absent.
Gambia	One outbreak	A O SAT 2			No details submitted.	
Ghana	43 samples ELISA positive	A O SAT 1 SAT 2				57
Guinea Biss.					Reported as absent.	
Guinea					No details submitted	
Liberia		A, SAT 2			No details submitted.	
Mali		A, SAT 1 O, SAT 2				3
Mauritania					No details submitted	
Niger	13 Outbreaks awaiting serotyping	A,O,SAT 1 SAT 2				45
Nigeria		A, SAT1,O				15
Sao Tome Principe					No details submitted.	
Senegal		A,O,SAT 2			?	12
Sierra Leone					Reported as absent.	
Togo	One outbreak 2012	O, SAT 1			O, SAT 1	79

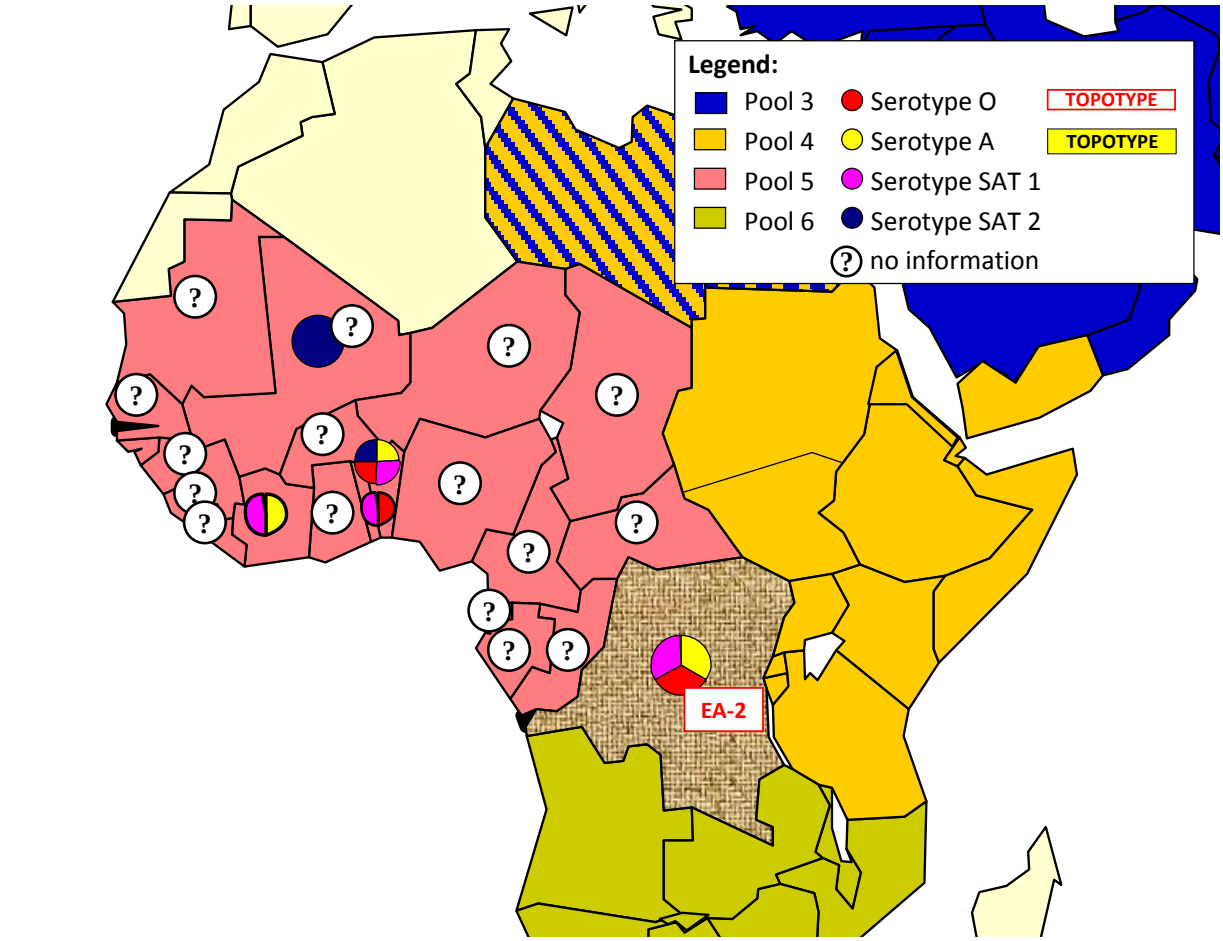
New or significant events in Pool 5 .

None reported for this reporting period.

Events in Pool 5 from previous months.

- **Benin**[1] - reported 22 outbreaks in the second half of 2011 bringing the total outbreaks of FMD reported to the OIE in 2011 to 59.
- **Burkina Faso**[1] – additional reporting to the OIE brings the total number of outbreaks for 2011 to 161.
- **Cameroon**[5] - 11 outbreaks reported for the first three months of 2012; samples to be sent for analysis.
- **Nigeria**[1] – total outbreaks reported to OIE for 2011 is 15.
- **Niger**[1] - total outbreaks reported to OIE for 2011 is 45.
- **The Gambia**[5] - outbreaks in the North bank, Central river and Western regions; samples sent for analysis.
- **Togo**[5] - one outbreak at Adetikope (Adodovi) on 21 February 2012.

Pool 5. FMD distribution by serotypes 2010 - 2012



Pool 6. SOUTHERN AFRICA

Country	Data WRL FMD[4] 2011 - 2012	Data from field officers[3] 2011 - 2012	Reported serotype/outbreaks in OIE 2012		Reported serotype/outbreaks in OIE 2011	
			Serotype	No of outbreaks	Serotype	Nb of outbreaks
Angola						None
Bostwana	SAT 2		SAT 2	1	SAT 2	4
Congo D. R.	A	A, SAT 1			O, A, SAT 1	3
Malawi					SAT 2	2
Mozambique				None	SAT 2	1
Namibia			SAT 1	1	SAT 1	4
South Africa	SAT 2		SAT 2	5	SAT 1	46
Zambia				None	SAT 2	1
Zimbabwe					SAT 2	10

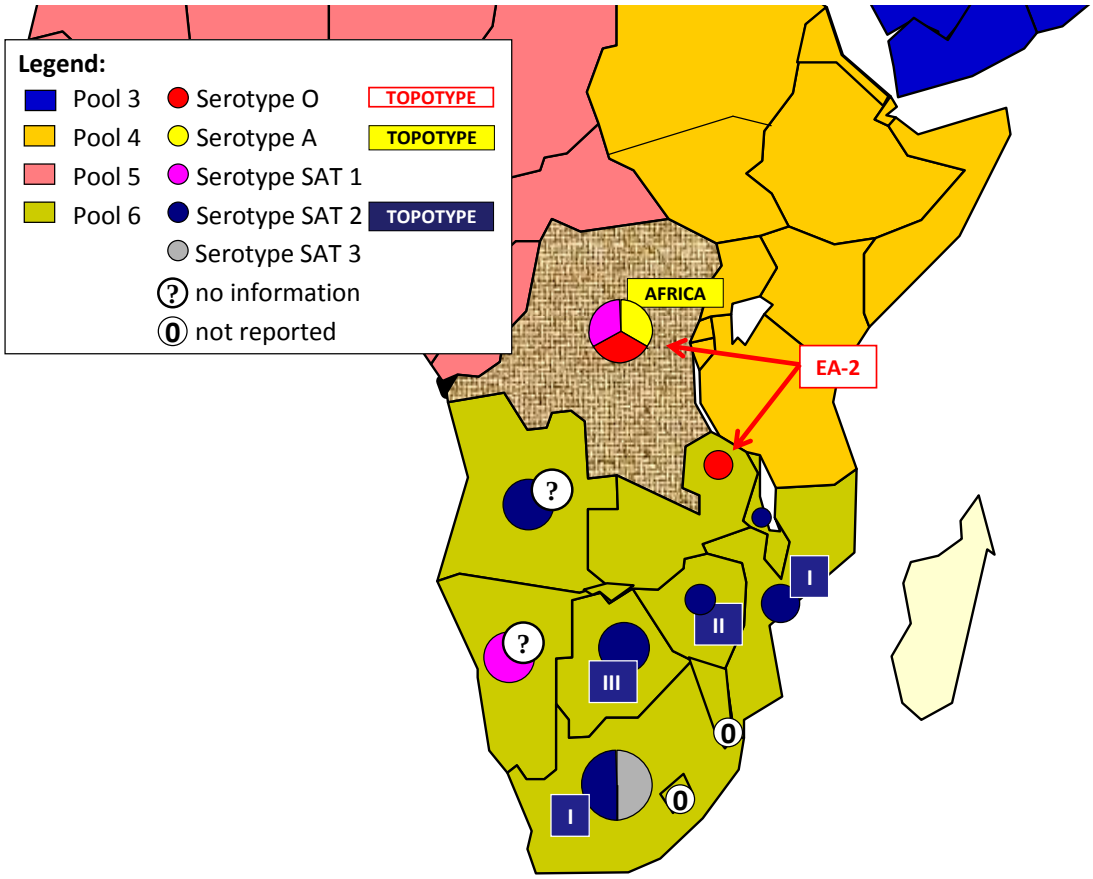
New events in Pool 6

- **Botswana**[1] - partial VP1 sequence data received from the Botswana Vaccine Institute showed the new FMD type SAT 2 out break reported in cattle at Matsebe Crush, Ngami, Ngamiland, Maun on 23/05/2012 to be due to topotype III.
- **Namibia**[1] - a follow up report submitted on 17 July 2012 regarding outbreaks resolved in the Caprivi Strip on 20 March indicates that the SAT 1 viruses from all four 2011 outbreaks were 100% similar to each other and differed by 6% from a previous SAT 1 outbreak in 2010 also in the Caprivi strip. The 2011 viruses also cluster with Botswana SAT 1 isolates from 1998 and 2006 with a nucleotide difference of 11% and 12% respectively.
  No new cases have been reported since 15 January 2012.

Significant events in Pool 6 from previous months

- Botswana[1] - the reoccurrence of the disease was detected after poor vaccination coverage following flooding of the area, which made some animals inaccessible for vaccination.
  The source of the virus is suspected to be due to infected buffaloes that came in contact with the poorly protected cattle population.
- **South Africa**[1] – five outbreaks were reported to the OIE for April 2012. According to the WRL reports that the five outbreaks were SAT 2 (no genotyping available).
- **Zambia**[1] - the outbreak of SAT 2 that started on in January 2011, close to the Tanzanian border has been declared resolved in a report submitted on 12 June 2012.

Pool 6. FMD distribution by serotypes 2010 – 2012



Pool 7. SOUTH AMERICA

Country	Data WRL FMD[4] 2011 - 2012	Data from field officers[3] 2011 - 2012	Reported serotype/outbreaks in OIE 2012		Reported serotype/outbreaks in OIE 2011	
			Serotype	No of outbreaks	Serotype	No of outbreaks
Ecuador					O	5
Paraguay					O	2
Venezuela					O,A	2

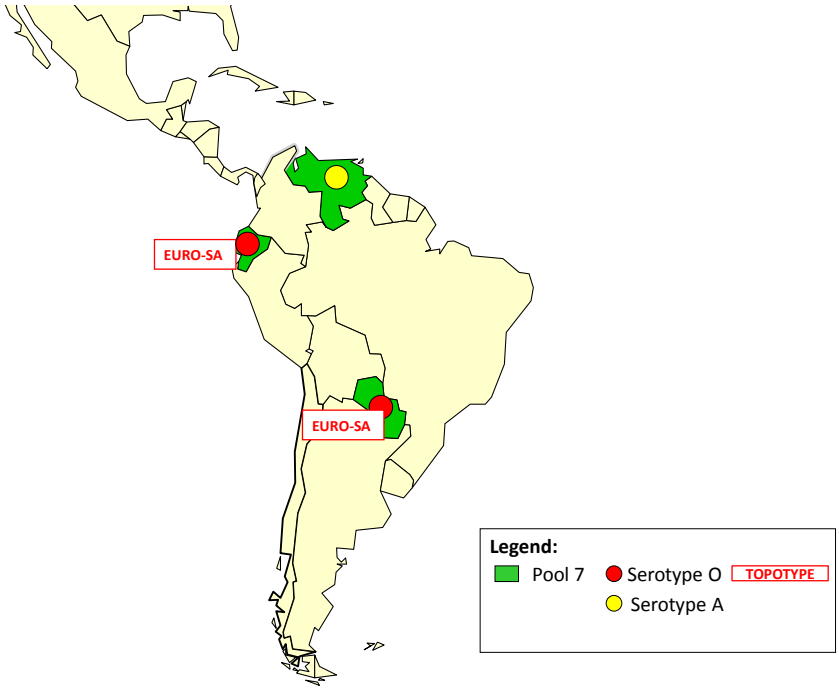
New Events in Pool 7

- No FMD outbreaks have been reported in this region during 2012.

Recent important events 2011-2012 in South America[11]

- Nine outbreaks of FMD were notified in 2011: eight serotype O (five Ecuador, two Paraguay, one Venezuela) and one serotype A (Venezuela) – no outbreaks have been notified in the region in 2012.
- Bolivia had 5 years without FMD outbreaks (last outbreak February 2007) and received the OIE recognition of free without vaccination for the Region del Altiplano.
- Brazil started epidemiological studies for the recognition of a free zone with vaccination in the states of its north east Region.
- Ecuador and Venezuela maintain FMD virus circulation.
- Peru has requested the OIE recognition of free without vaccination for the remaining part of its territory.

Pool 7. FMD distribution by serotypes 2010 – 2012



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2. Global Early Warning System (EMPRES/GLEWS) reports http://empres-i.fao.org/empres-i/home ; National Authorities, 10/11/2011, http://www.gov.kg/?p=4716]
3. Reports from FAO/EuFMD projects and field officers
4. World reference laboratory for Foot and mouth disease (WRLFMD), www.wrlfmd.org
5. RESOLAB-FMD West Africa (FAO/EuFMD supported FMD network).
6. Nakuru Real-Time Training courses (NTC) on Foot-and-Mouth Disease reports
7. East African-FMD Laboratory Regional Network.
8. Project Directorate on Foot and Mouth Disease, India
9. SENASA
10. Conference on Scientific developments and technical challenges in the progressive control of FMD in South Asia, New Delhi, India, 13-15 February 2012.
11. 2nd Global FAO/OIE conference on FMD, 27-29 June 2012, Bangkok.