



FOOT AND MOUTH DISEASE IN TURKEY

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Presentation outlook

- **Overview Epidemiological situation in 2005-2007**
- **Recent Outbreak situation**
- **Recent Thrace 2007 outbreaks**
- **Evaluation of Outbreaks**
- **Vaccination policy and current vaccine delivering**



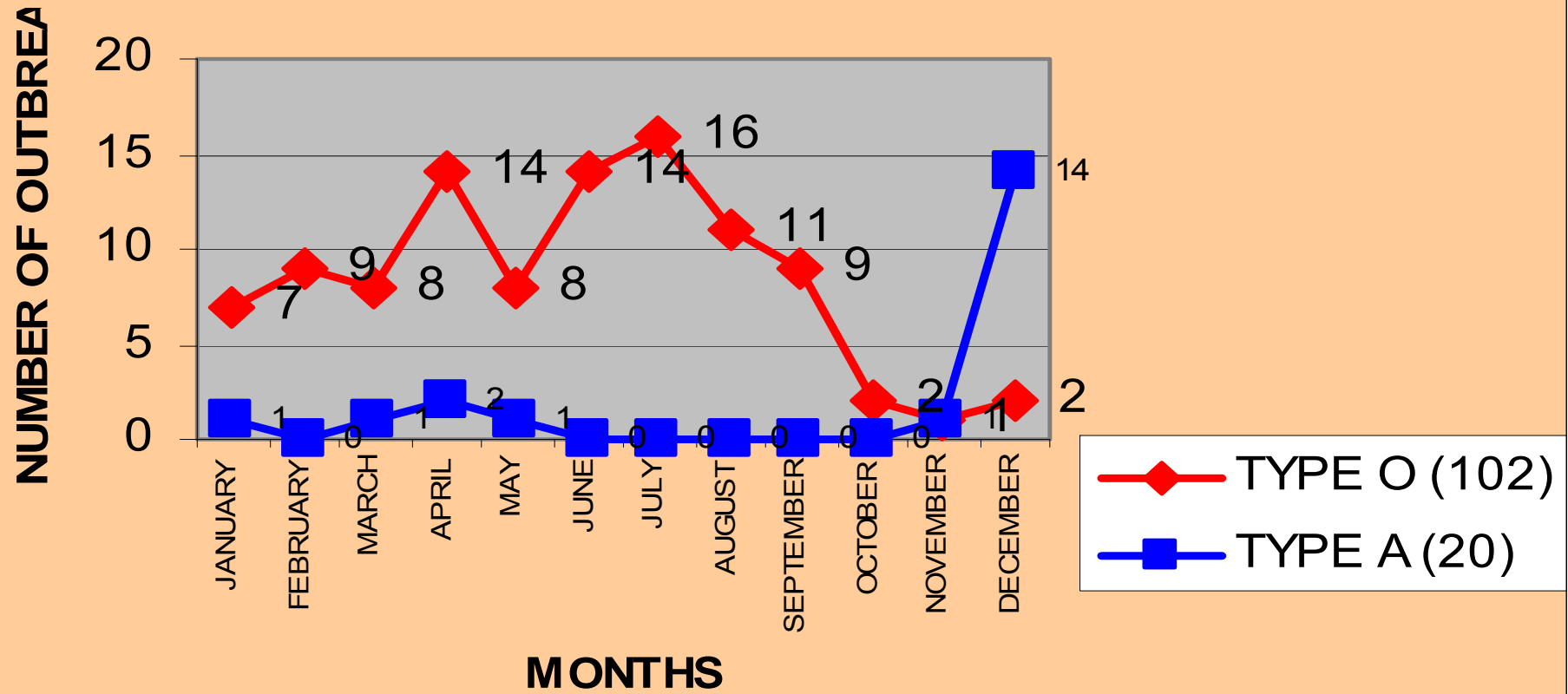
Introduction

Foot and mouth disease (FMD) is endemic in Anatolia (Sporadic in Thrace)

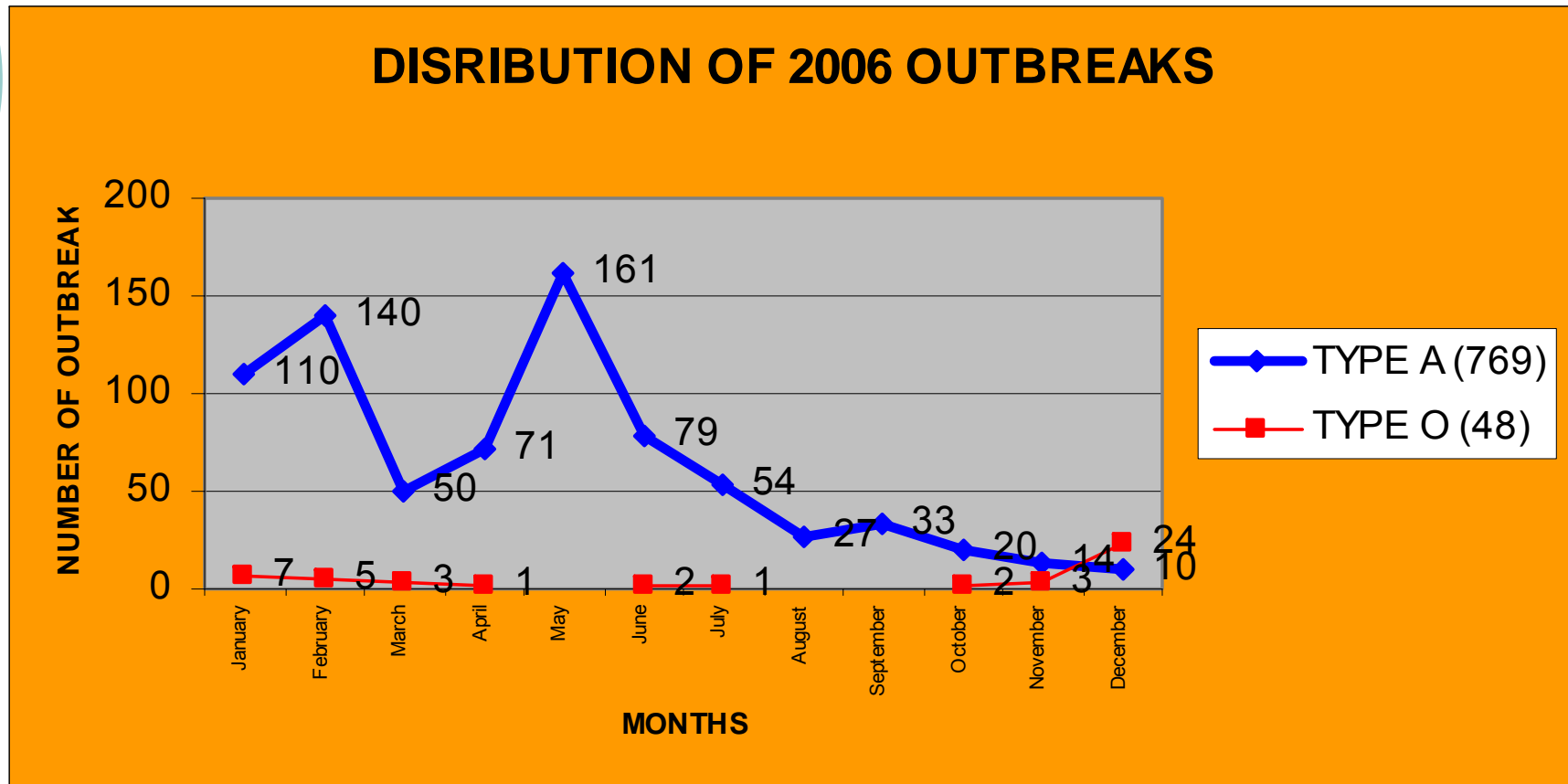
- New variant of type O PanAsia
 - Endemic in Anatolia since October 2006
- A Iran 2005
 - Endemic in Anatolia since November 2005
- Asia 1
 - No case since 2002

2005 outbreaks

DISTRIBUTION OF 2005 OUTBREAKS



2006 outbreaks



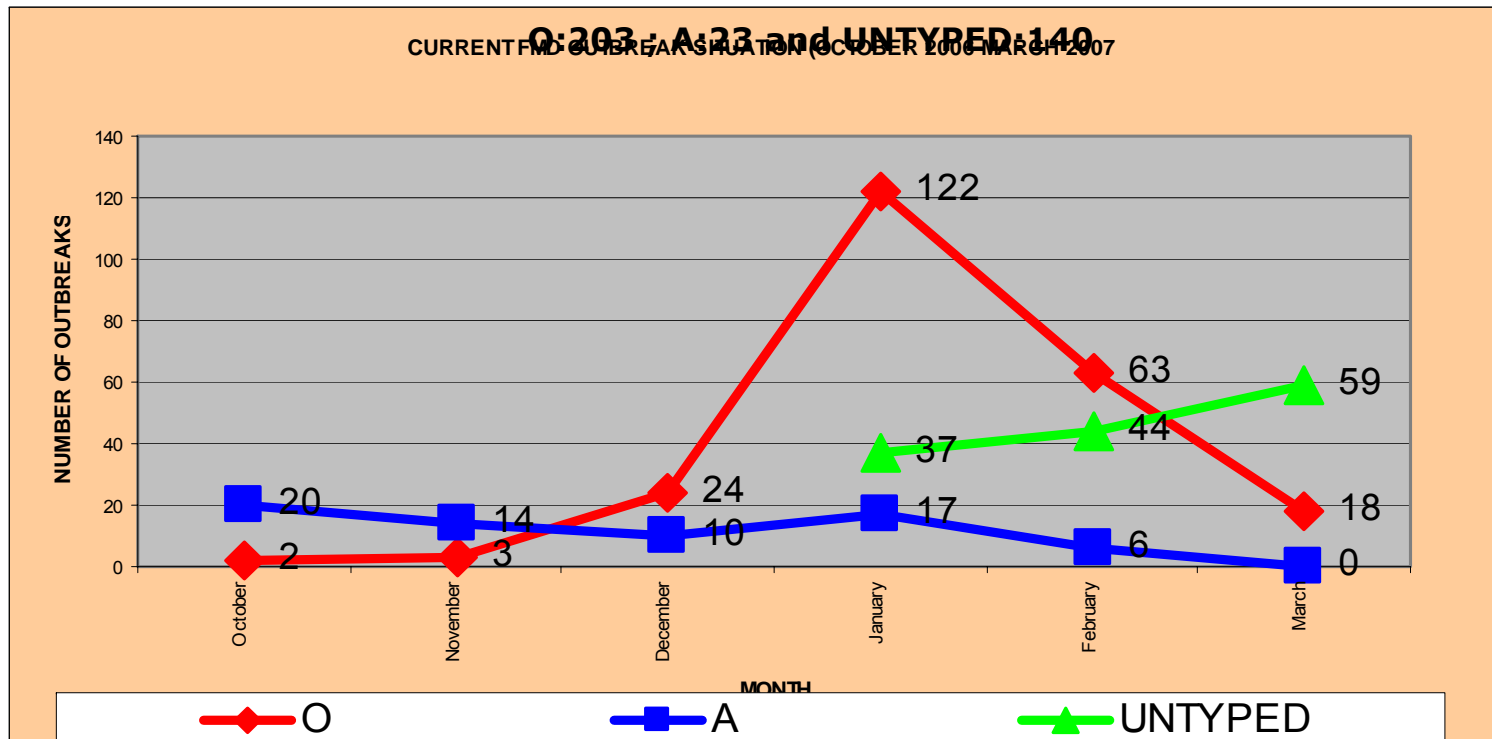


CURRENT FMD OUTBREAK SITUATION

- Turkey has been under the high risk with circulating a severe virulent new O subtype, O Pan-Asia strain.
- Epidemiological investigation and molecular epidemiologic studies were indicated that O Pan-Asia substrain has been introduced to Turkey up to October 2006.
- It has been recently recorded outbreaks mostly with type O, a total of 366 outbreaks:
 - 203 of by type O,
 - 23 of by type A and
 - 140 of untyped

CURRENT FMD OUTBREAK SITUATION

- ✓ 48 outbreaks with type O in 2006, in O Alfa 05 lineage genetically,
- ✓ the numbers of type O outbreaks were increased at beginning of October 2006.
- ✓ Because of entrance of new strain and animals movements during the Kurban Festival (end of the year), viruses were spread all over the country
- ✓ and numbers of outbreaks were reached on pick on January 2007





CURRENT FMD OUTBREAK SITUATION

Patogenicity

When compared with previous year's O outbreaks:

- Clinical signs were severe
- However, dynamics of spread almost same
- Causes more death on ages of young; lamb

Epidemiology

- Disease was observed all over the country
- However, dynamics of spread was
 - very limited within a few premises in epi unit, particularly well vaccinated area
 - In well vaccinated area: No spread from cattle to small rum pop.;
- Observed widely on:
 - Young population, primo vaccinated
 - Movement contact anim.
 - Fattening prem.
 - Unregular or unvaccinated population



Index case for O Pan Asia

- **O Pan-Asia sub strain was detected first time at Selvioglu village in Uşak on 8th October 2006.**
- **this virus was closely matched with viruses isolated in Iran in 2006**
- **It is uncertain that whether this was index case or not for the new sub strain**
- **Since Uşak province is located west of Turkey,**
- **it was probable be occurrence earlier:**
 - another case in East Region of Anatolia, close to Iran border.



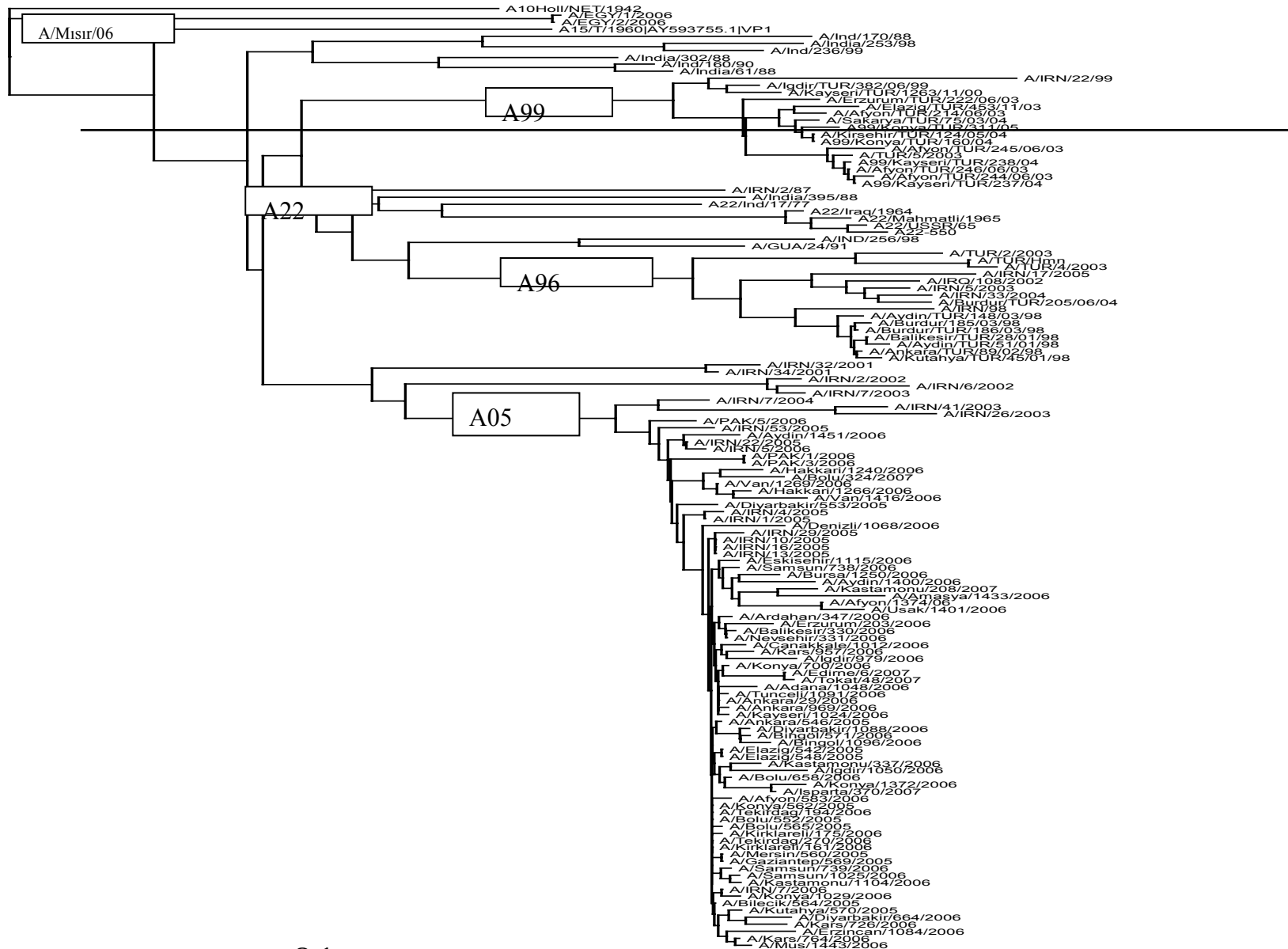
Index case for O Pan Asia

- Is it possible another source?
 - According to N. Sequencing data: Yes
- the isolates were not only closed to Iran isolates but also they were closed to isolates of Middle East Region, particularly of Jordan.
- The recent data made on March showed that isolates collected from Şırnak Province in South East Region of Turkey, near to Iraq/Syria border were closed to these lineages

Results of nucleotide sequence analysis

PROT. NO	PROVINCE	YEAR	MONTH	TYPE	GENOTYPE	TOPOTYPE
6	Edirne	2007	January	A	A05	ASIA
5	Erzincan	2007	January	O	PAN ASIA	ME-SA
13	Muğla	2007	January	O	PAN ASIA	ME-SA
15	Tokat	2007	January	A	A05	ASIA
83	Konya	2007	January	O	PAN ASIA	ME-SA
120	Konya	2007	January	O	PAN ASIA	ME-SA
207	Kastamonu	2007	January	A	A05	ASIA
285	Şırnak	2007	February	O	PAN ASIA	ME-SA
324	Bolu	2007	February	A	A05	ASIA
357	Kırklareli	2007	February	O	PAN ASIA	ME-SA
370	Isparta	2007	February	A	A05	ASIA

FMDV Type A phylogram for regional strains circulating in 1998 to present



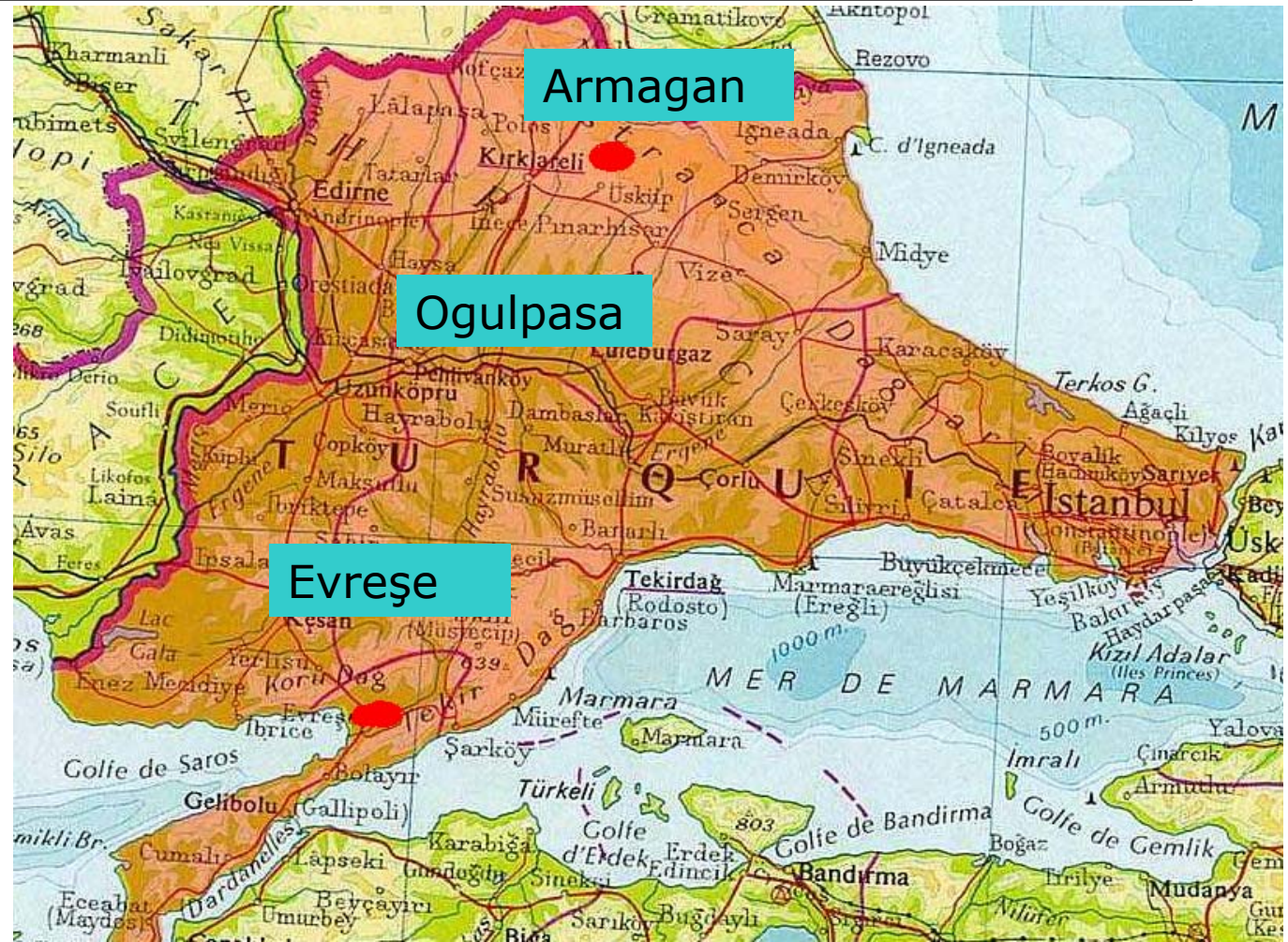


Antigenic relationship of Isolates

- genetically differences of O Panasia is clear
- and affected severe clinically on animals,
- However, recent available R Value results:
 - show that antigenically,
 - O1 Manisa vaccine strain has been covered O Pan Asia isolates
 - The data for type A 05 Iran outbreaks which detected as limited number in 2007 show that it has been closed to their genetic lineages and given high protection antigenically

OUTBREAKS IN THRACE REGION

In 2007, three outbreaks has been detected in Thrace Region, caused by uncontrolled animal movements after the Kurban Festival.





OUTBREAKS IN THRACE REGION

Oğulpaşa, Havsa Edirne

- **Date of Outbreak: 3rd January 2007**
- **Affected anim:11 cattle, all slaughtered**
- **Extend of disease: limited two prem.**
- **Source of transm.:Istanbul Anm. Market(Kurban Market)**

○ **Armağan, Kırklareli**

- **Date of Outbreak: 22th February 2007**
- **Affected anim:9 dairy cattle, all slaughtered**
- **Extend of disease: limited inf. prem.(No extent, according to NSP serosurvey results)**
- **Source of transm.: Unclear?**

○ **Evreşe, Gelibolu, Çanakkale**

- **Date of Outbreak: 30th March 2007**
- **Affected anim:15 cattle, all slaughtered including suspepcion(76)**
- **Extend of disease: limited 3 prem.**
- **Source of transm.: Transferring contact animals from Sakarya Prov.(Anatolia)**



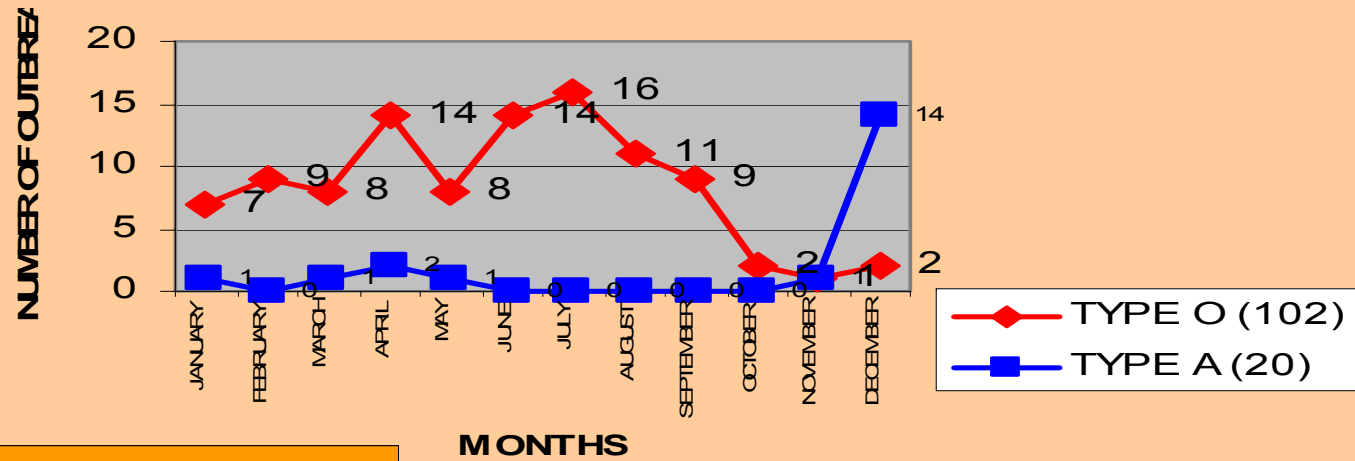
Evaluation of Outbreaks

- **Why observed sharp outbreaks pick twice a year**

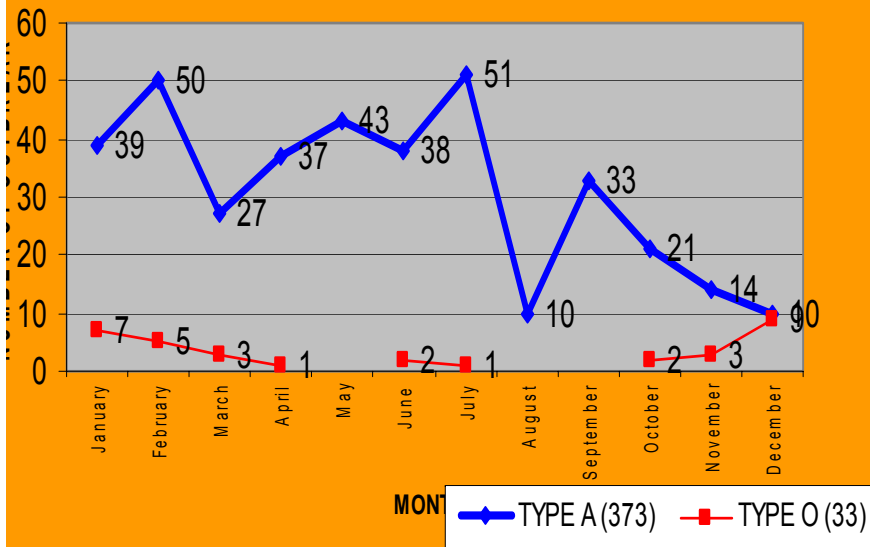
- Kurban movements coincide on end of vaccination campaign(first pick)
- Sesimal chaigning effects on the virus spread;
 - maintainance virus in vinter and
 - spread in spring during the grazing movement
 - movement for fattening premises demand

Overview last three years

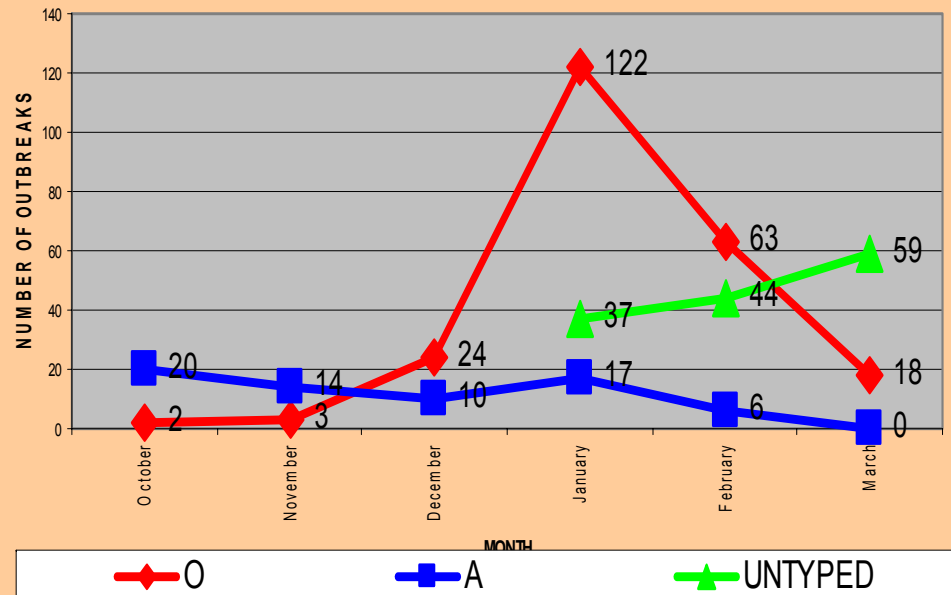
DISTRIBUTION OF 2005 OUTBREAKS



DISIRIBUTION OF 2006 OUTBREAKS



CURRENT FMD OUTBREAK SITUATION (OCTOBER 2006-MARCH 2007)





Evaluation of Outbreaks

Turkey has been experienced with FMD outbreaks different epidemiological features year to year

- In a year ;
 - it has been occurrence an upsurge of outbreaks caused by one new type, which was invaded all over the country and those were taken the under control by efficient measures;
- in the next year;
 - it has been welcomed again a new upsurge of outbreaks caused another FMD type,
 - such as Asia-1 outbreaks in between 1999 and 2001,
 - A 05Iran in 2005/2006 and
 - now current type O Panasia.



Evaluation of Outbreaks

- clearly appeared that FMD outbreaks were very frequent in villages
 - probably in fattening herds,
 - in population which can contact with movement animals and
 - given the age of young primo vaccinated or unvaccinated animals ,
 - but occurred only occasionally in specialised cattle dairy herds.
- This observation suggests that the formers herds constitute a reservoir of FMDV and that they might be a source of outbreaks for dairy herds, which have better biosecurity measures.



Evaluation of Outbreaks

- **The vaccination coverage for Autumn 2006 clearly show that some area, has very poor coverage;**
 - **which is also allow the maintains of circulating live virus.**
 - **also variability of vaccination coverage in unit (village) can be resulted same risk.**
- **Reasons of poor vaccination coverage:**
 - **Some owners refuse to have their cattle vaccinated,**
 - **because they are scared/suppose that the vaccination might induce**
 - **abortion, decrease of milk production, ect**
 - **also for others have no highly awareness of the disease**
 - **In addition, animals that are not 3 months of age at the moment of the vaccine phase might remain unvaccinated until the following phase and thus until the age of around 7 months.**
- **In these conditions, the existence of non- or not properly vaccinated animals reveals the presence of FMDV in the environment brought by other animals, humans, vehicles, etc.**
- **In all this circumstances, animal movements should be taken strongly consideration on risk to help by the spread the existed circulating virus.**



Evaluation of Outbreaks

Why disease can not be eradicated?

- it has been conducted control measures with big effort to stop the spread of the disease:
- BUT achieved it partly not fully!
- Because;
 - Vaccination is patchy and variable
 - Movement control is unefficient
 - Border with infective country is unstable, Very dynamic period of animal movements
 - Insufficient funding for stamping out

Evaluation of Outbreaks

SO strategy already used for combating the disease should be revised and defined an effective policy.

To achieve this objective:

well structured network internationally

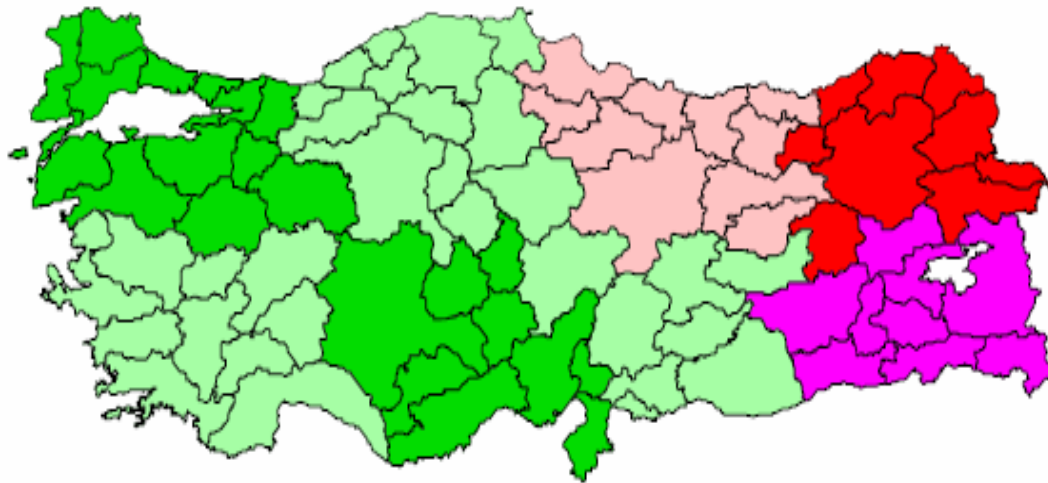
Coordination with neighboring country with effective project to stop:

- Animals movement & the spread of the disease by the others way

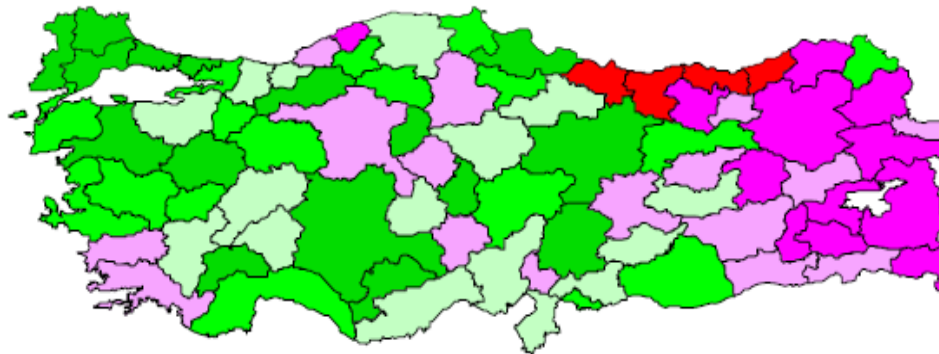
- dialer should be taken under the registration system
- solution for movements during the Kurban Festival
- Encourage owner for early notification of disease
- Improvement epidemiological investigation
- Remind and to train animal owners and their staffs in biosecurity
- establishment a regional vaccine/sub strain bank to be preparedness for entrance a new strain
- **This recent situation demonstrates once again that the vaccination is only not sufficient tool to control FMD and needs to be associated with strong sanitary measures.**

Turkey Autumn Vaccination Coverage

Autumn 2006 FMD Vaccination Coverage by Rough Region



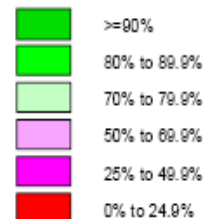
Autumn2006VAccCoverageByRoughRegion



Vaccination coverage achieved by province

by Nick Honhold

Autumn 2006 FMD vaccination coverage



% coverage	Number of provinces
≥90%	15
80% - 89.9%	18
70% - 79.9%	16
50%-69.9%	16
25% - 49.9%	12
0% to 24.9%	4

VACCINE DONATED BY EU/EUFMD IN 2006

In 2006, EU/EUFMD was donated 5.1 million doses Vaccine for Turkey

	Spring	Autumn	Place	Total
Trivalent	1.491.500	1.010.000	12 prov. Marmara/Thrace	2.501.500
Bivalent		1.660.000	19 prov. Inner Anatolia	1.660.000
On November, Trivalent(Cedi)	-	1.000.000	Thrace and for emergency	1.000.000
Total	1.491.500	3.670.000		5.161.500

VACCINE AVAILABILITY IN 2007



**At Şap Institute
During the six months period
for renovation :**

- oAntigen Concentration,**
- oInactivation,**
- oVaccine Formulation and**
- oVaccine Bottling Units
reconstructed according
to GMP rules**

**✓finally vaccine production
was started on January
2007.**

VACCINE PRODUCTION AT ŞAP INSTITUTE

5 million doses trivalent vaccines have been already produced and delivered to use

- **and some amount of antigen, which is equal to 4 million trivalent vaccines, is waited to be bottling**
- **which means that preparation of vaccine to be need for spring vaccination campaign has been already achieved successfully.**

- **Vaccine strains produced at Şap Institute are as follow:**
 - O1 Manisa**
Matches with new variants of Pan Asia type O
 - A22 Iraq 24/67**
Matches with a Iran 05
 - Asia-1 Shammir**
- **According to the vaccination program, vaccine production will be continued to be used for the next campaign.**



Acknowledge

- **Thank to:**
- **EU/EUFMD for donation of vaccine**
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- **Nick Honhold for data on vaccination coverage**