



**REPUBLIC OF TURKEY  
MINISTRY OF FOOD, AGRICULTURE AND  
LIVESTOCK**



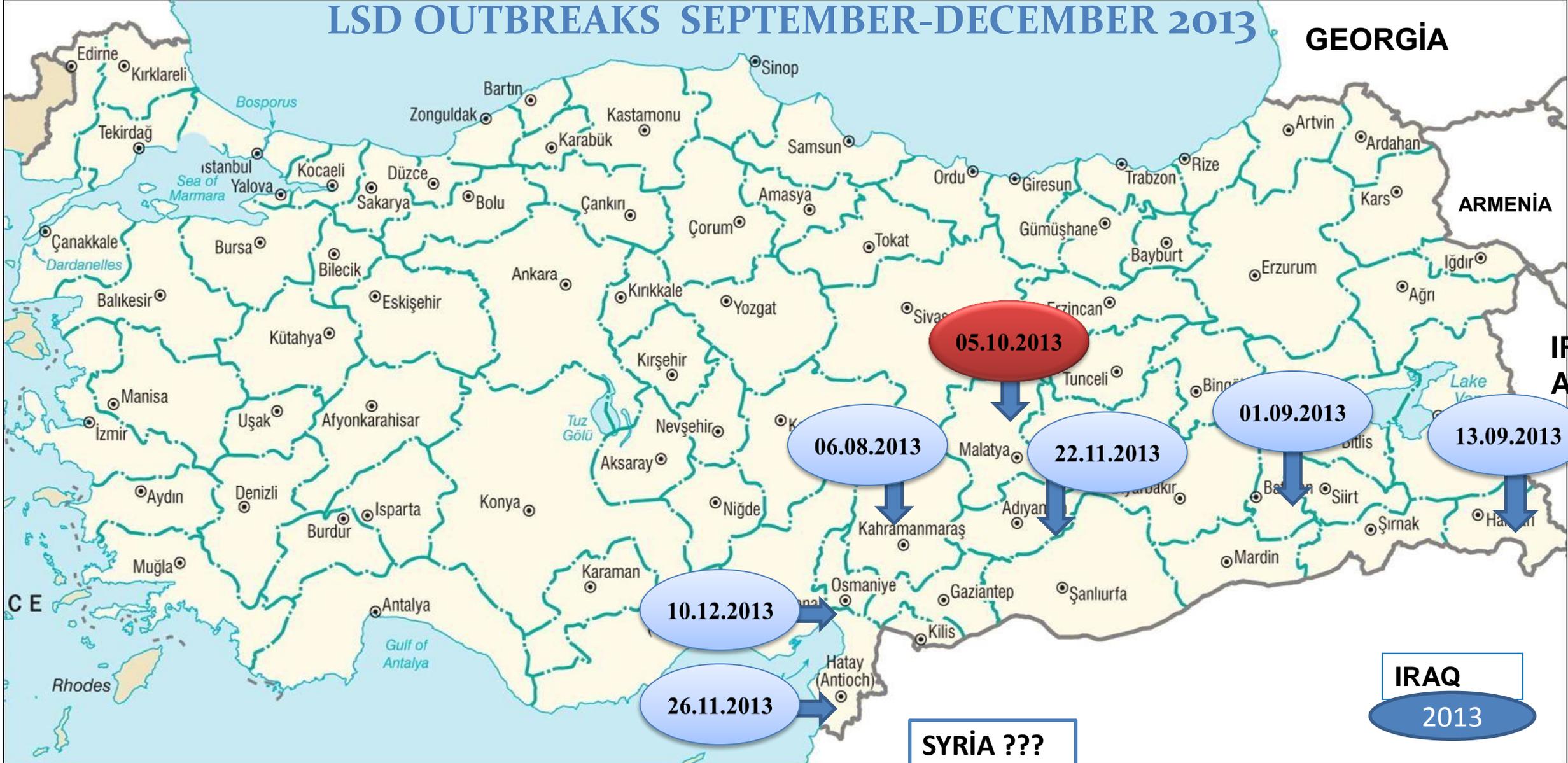
**Field Experiences on LSD Vaccination in  
TURKEY**

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**İstanbul/TURKEY**

**Third Meeting (LSD 3)**  
**Standing Group of Experts on Lumpy Skin Disease**  
**in South-East Europe**  
**under the GF-TADs umbrella**  
**12-13 December 2016, İSTANBUL, TURKEY**



# LSD OUTBREAKS SEPTEMBER-DECEMBER 2013



# Situation & Activities (in 2013)

## ➤ **LSD control strategy ;**

Veterinary Services, Plant Health, Food and Feed Law no: 5996 and in compliance with Council Directive 92/119/EEC except slaughtering.

- ✓ Restriction, Quarantine, Sampling, Diagnosis
- ✓ Control of animal movements
- ✓ Cleaning and Disinfection in outbreak areas
- ✓ Insect control
- ✓ **Vaccination in outbreak area.**

# Vaccine

- Because of antigenic homology and cross-protection between sheep pox, goat pox and LSD virus, any of these viruses can be used as a vaccine strain to protect cattle against LSD.
- Four live attenuated capripox virus strains are used for vaccine production(OIE, 2010).
  - ✓ Kenyan sheep pox
  - ✓ Yugoslavian RM 65
  - ✓ Romanian sheep pox
  - ✓ South African Neethling strains





# LSD Vaccination

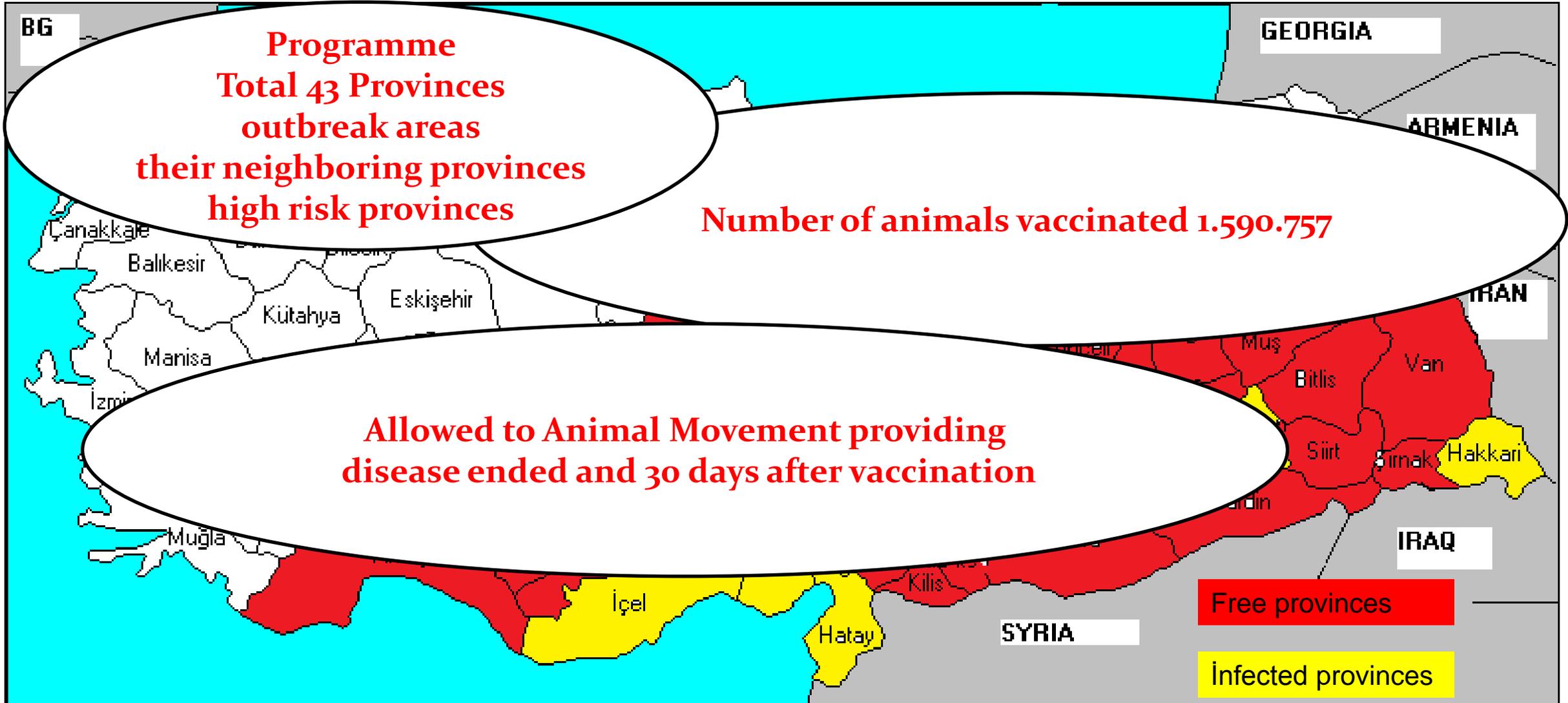
- In 1975, Sheep and Goat Pox disease occurred in Bakırköy district of İstanbul. The local strain (Bakırköy strain) isolated from outbreak by Pendik Veterinary Control Institute.
- After 65 passages in primary lamb kidney cell culture, vaccine strain attenuated and lyophilized. This vaccine (Penpox-M) contains at least  $TCID_{50} 10^{2,5}$  viruses per dose and it is still currently in use against LSD.
- In 2013, Penpox – M used one dose ( $10^{2,5}$  TCID) per cattle as OIE Manual remarked.



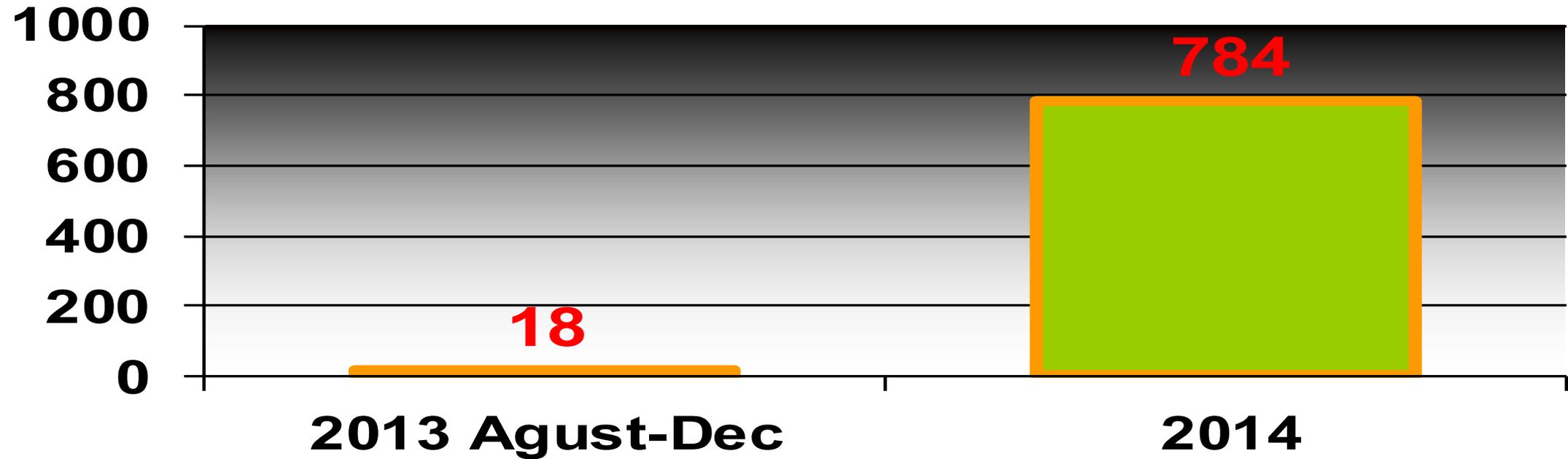
# Situation & Activities (in 2014 )

- Payment of compensation (2014)
- ✓ Eradication of the disease and may occur as a result of loss compensation in 2014 was added to the list of compensation diseases
- ✓ Positive laboratory result and clinically symptomatic animals in outbreak zone compensated to the owners (50 % of the animal value)

# Vaccination Zone in 2014



# LSD Outbreaks & Years (2013-2014)





# Observation and Evaluation of 2014

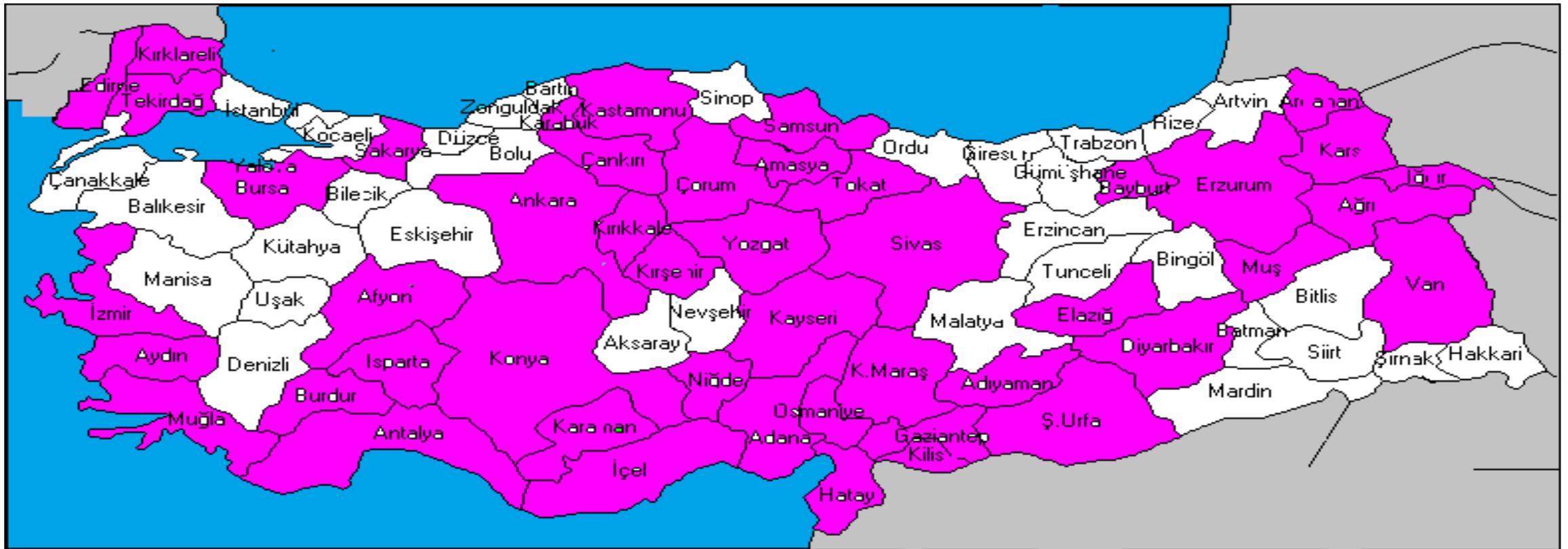
- **Some vaccinated animal was sick after vaccination ;**
  - ✓ Animals in the incubation period of disease
  - ✓ Biological properties (Lactation, pregnancy, weak body condition) are very effect to occur the LSD; **Predispose factors**
  - ✓ The intency of the outbreaks in region is an other factor.
  - ✓ Vaccination failure(cold chain, sunlight...)
- **Subcilinical infected animals** (after the quarantina period (30 days) the animals are allowed to move from the outbreaks areas) is a source of tranmission of the disease.
- **Kurban festival is** a potential risk for transmisson of the LSD to far away and control measures should be increased in this period.
- **Climatic changes and geografical status** are very effected to occurance of the disease (long summers and late coming winter, wetlands, altitude, plant cover)

# Situation & Activities (2015)

- **All provinces in Turkey were included in the vaccination campaign.** Vaccination determined by each local authority (because of differences between their climate conditions, geographical status and husbandry system)
- **Vaccine dose was increased to 3 times doses sheep and goat pox vaccine (Penpox)**
- **Vaccination campaign was planned for all cattle populations (older than 3 months and under 9 months pregnant)**
- **Compensation rate of 2015 was raised from %50 to % 100.**
- **Control of vaccination before animal movement after the completion of the vaccination campaign**



# LSD Outbreaks (2015)

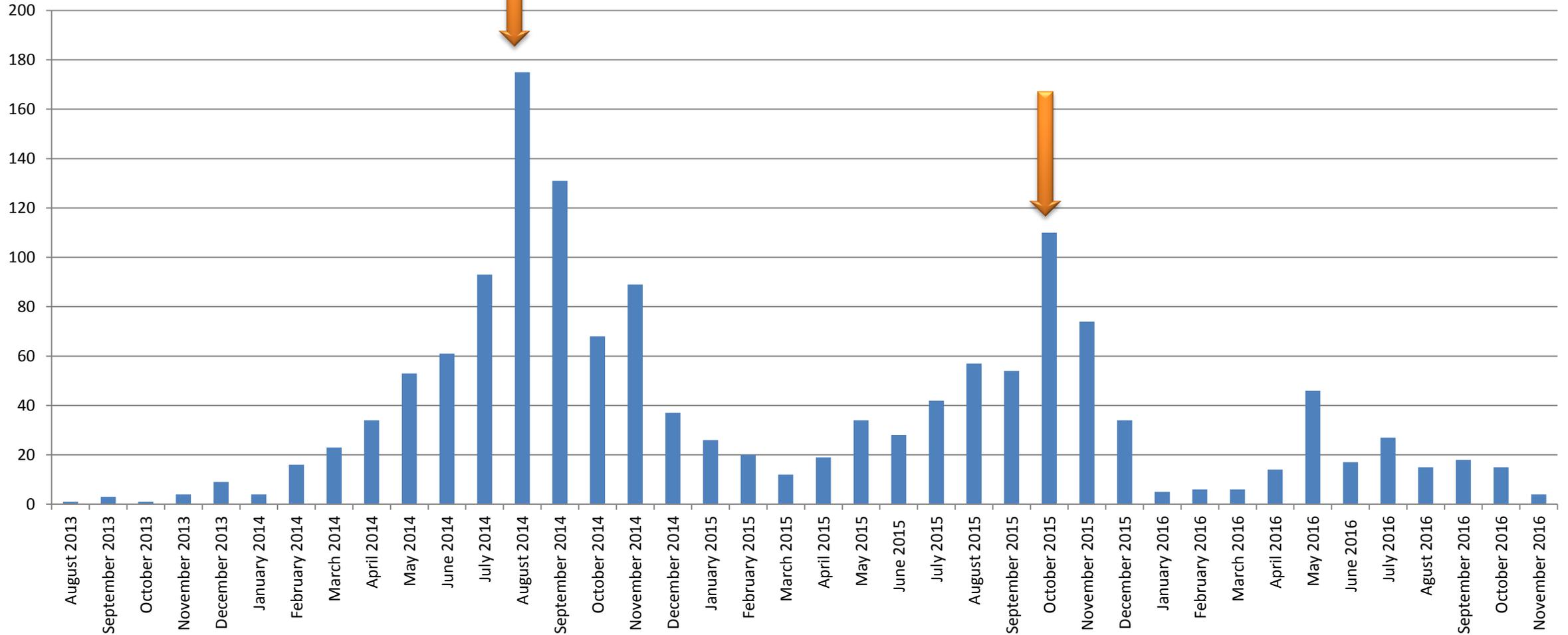


Total 510 outbreaks,

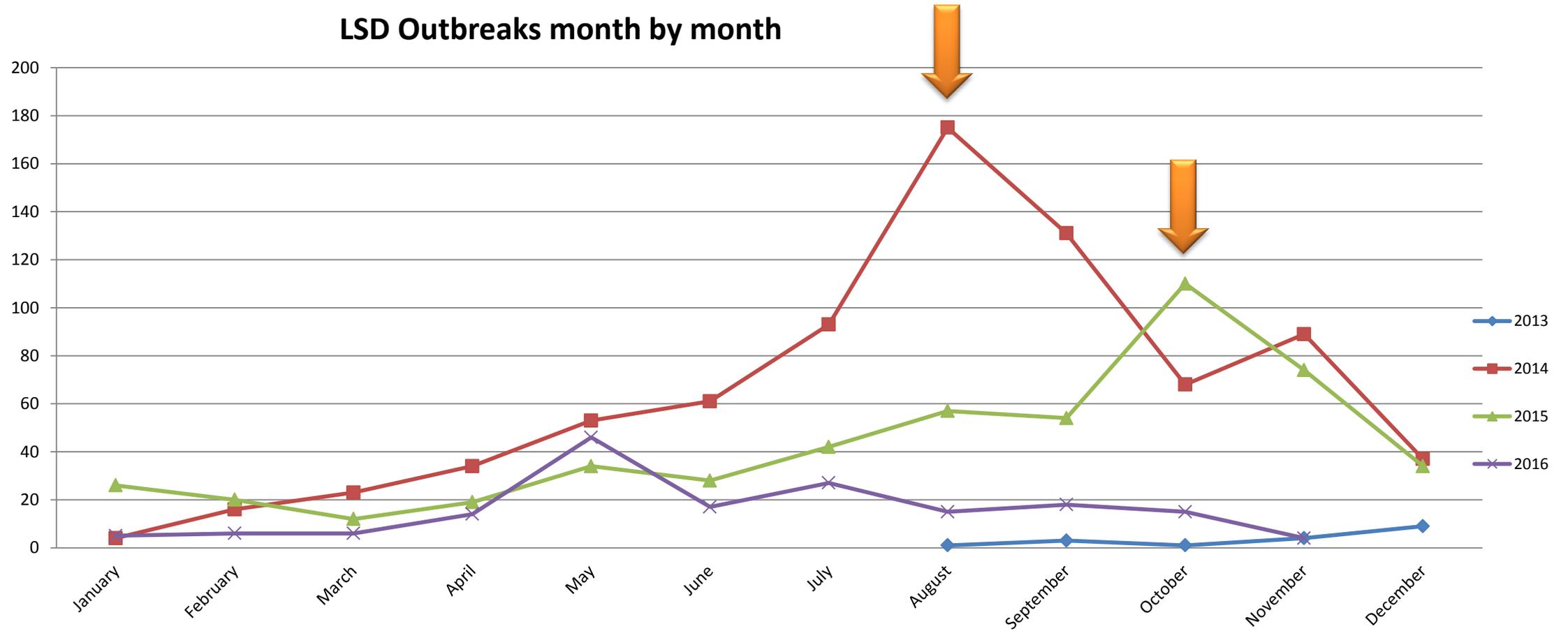


# Monthly LSD reports from 2013 to 2016

2013-2016 LSD Outbreaks



# LSD outbreaks month by month between 2013 - 2016



# Early outbreak in Turkey

Province	District	Village	# exposed cattle	# Infected Cattle	# Dead Cattle	Morbidity (%)	Mortality (%)
Kahraman maraş	Elbistan	Çatova	17	10	4	58,8	23,5
Kahraman maraş	Elbistan	Çatova	6	1	0	16,7	0,0
Kahraman maraş	Elbistan	Çatova	15	5	0	33,3	0,0
Kahraman maraş	Elbistan	Kalealtı	7	1	0	14,3	0,0
Batman	Gerçüş	Karalan	190	13	8	6,8	4,2



# Evaluation of Penpox M Vaccine based on one dose

Risk factor	Category	Population at risk	Diseased	Incidence risk	p-value
Age (months)	<24	347	4	1.15	p<0.001
	24-48	193	14	7.25	
	>48	199	31	15.58	
	Total	739	49	6.63	
Gender*	Male	207	3	1.45	p<0.001
	Female	514	46	8.95	
	Total	721	49	6.80	
Breed	Local	129	9	6.98	p>0.05
	European	254	20	7.87	
	Cross	356	20	5.62	
	Total	739	49	6.63	
Vaccination	Yes	399	17	4.26	p=0.005
	No	340	32	9.41	
	Total	739	49	6.63	

- In questionnaires, detailed data (individual biodata): 39 dairy farms, 739 animals in 16 villages .
- Vaccination status data was collected from the farms 7074 animals in the same villages.
- 49 sick animals
  - ✓ 20 animals unvacc.
  - ✓ 29 animals become ill after vacc.
    - ✓ 17 animals become ill within 28 days after vacc.
    - ✓ 12 animals become ill after next 28 days or more after vacc.

- **Study area: Villages where LSD occurred in district level**
- **District level screening**

$$\text{Efficacy} = \frac{\text{ARU} - \text{ARV}}{\text{ARU}} \times 100$$

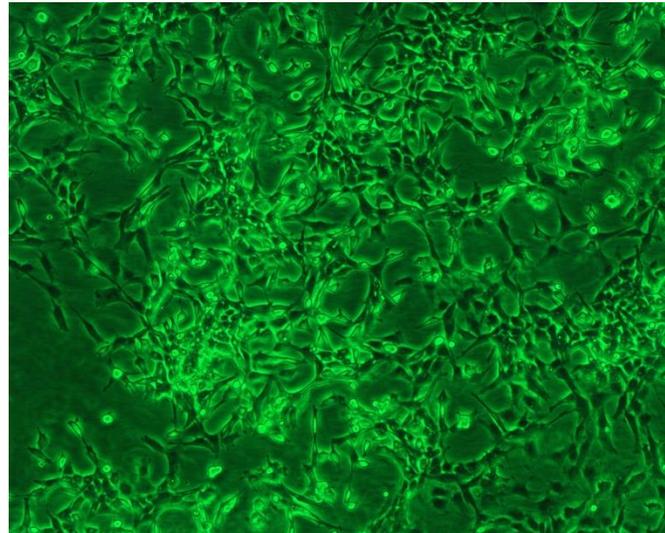
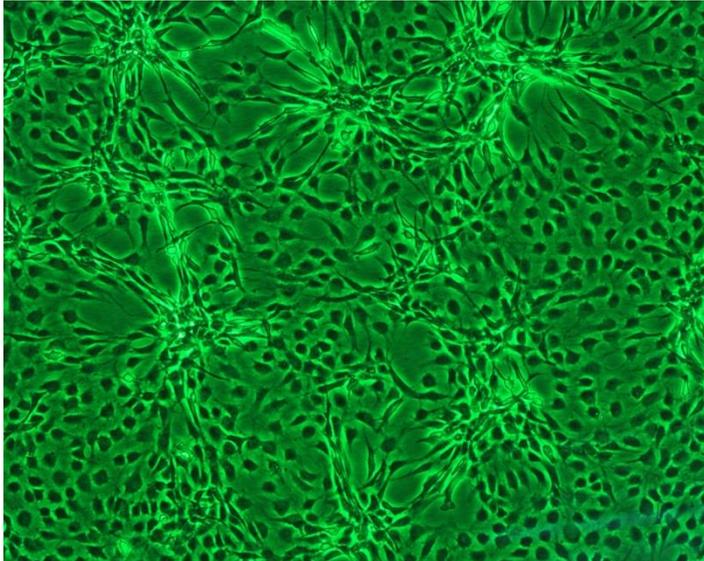
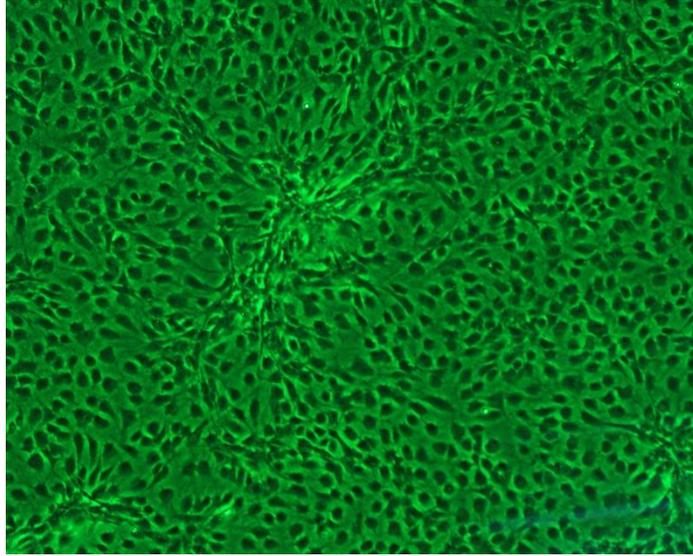
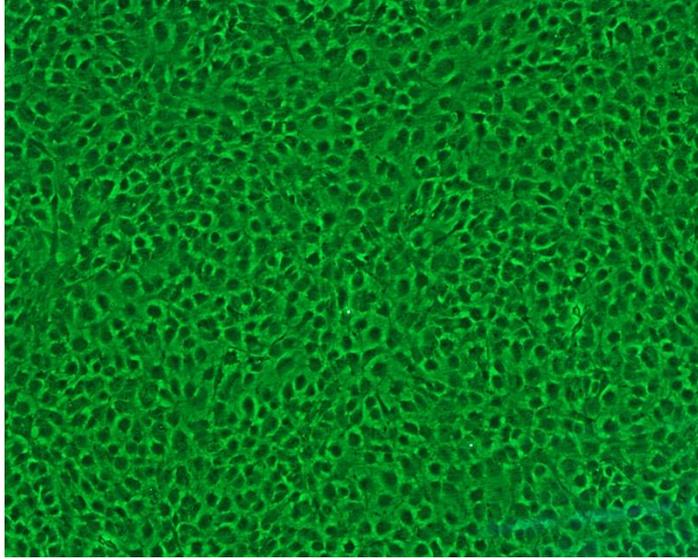
<b>Three dose vaccine efficacy in 2015</b>			
Uzunköprü District, Edirne Province			
#cattle	#vaccinated	#unvaccinated	#Total
Infected	35	20	55
Noninfected	6581	19	6600
Total	6616	39	6655
<b>Efficacy(%)</b>	<b>98,96</b>	<b>Morbidity(%)</b>	<b>0.5</b>

<b>One dose vaccine efficacy in 2014</b>			
Yahyalı District, Kayseri Province			
#cattle	#vaccinated	#unvaccinated	#Total
Infected	17	32	49
Noninfected	6836	928	7764
Total	6853	960	7813
<b>Efficacy(%)</b>	<b>92,56</b>	<b>Morbidity(%)</b>	<b>0,2</b>

<b>Three dose vaccine efficacy in 2016</b>			
Foça District, İzmir Province			
#cattle	#vaccinated	#unvaccinated	#Total
Infected	34	11	45
Noninfected	1426	0	1426
Total	1460	11	1471
<b>Efficacy(%)</b>	<b>97,67</b>	<b>Morbidity(%)</b>	<b>0.2</b>

# Clinical Symptom After Vaccination





## Isolation And Attenuaiton Study

1.,2., 3. And 4. Days  
After Inoculation  
Bovine Dermis Cell  
Lines

# Request Project Of Vaccine Efficacy Study

- **«The use of Bakırköy sheep and goat pox virus vaccine strain for LSD of cattle and the investigation of immun response»**
- Penpox-M is needed to reveal efficacy, effective dose and the duration of immunity in large animal populations by scientific studies.



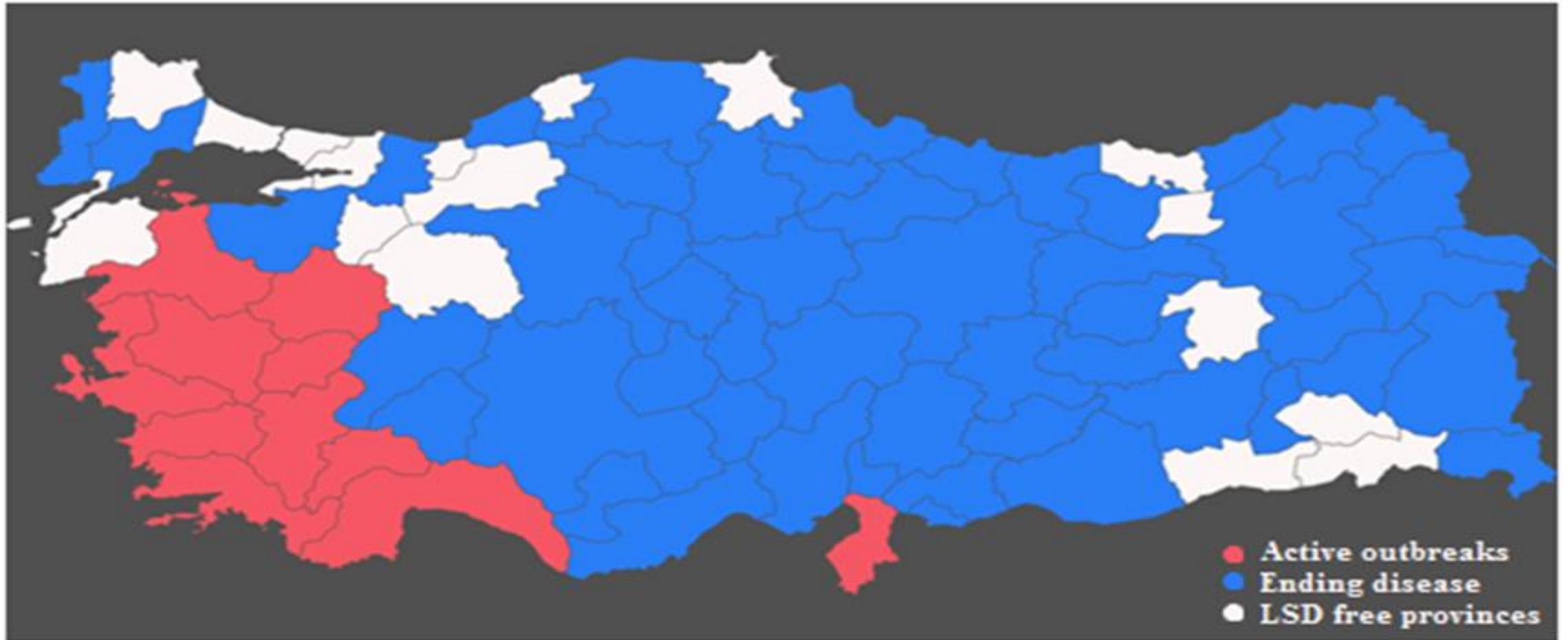
# Field Observations in Turkey

- **In winter 2014 also 2015**, outbreaks was continued slightly.
- Outbreaks were seen close or far from **water sources**.
- LSD outbreaks also occurred at **all heights** varying between 50 m to 1300 m by difference in Turkey.
- This could be evidence that LSDV can be transmitted by other vector or by other ways **which can survive in the environment for a long time or different conditions or different vector???**

# Experiences

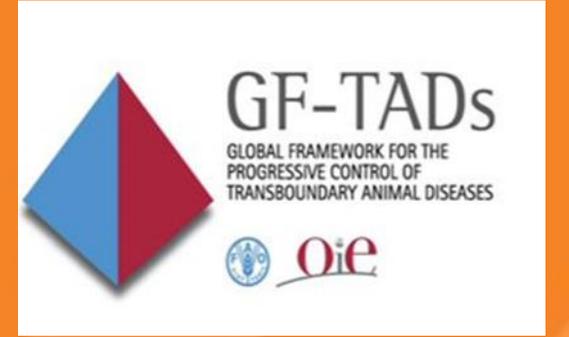
- ✓ **Vaccination is the** most important measure
  - ✓ **Rate of vaccination (80-90%) and vaccination time (BEFORE VECTORAL ACTIVITY)**
- ✓ **Clinical survey** must be done periodically.
- ✓ **Early detection and confirmation, culled and other control measures** should be applied **very quickly**.
- ✓ **Control of animal movement** very important especially for subclinical infected and infected in incubation period animals.
- ✓ **Vector control??**

## By the end of June 2016, active and finished outbreaks in Turkey



# Acknowledgements

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