



HELLENIC REPUBLIC  
MINISTRY OF RURAL DEVELOPMENT AND FOOD  
DIRECTORATE GENERAL OF SUSTAINABLE ANIMAL  
PRODUCTION &  
VETERINARY MEDICINE  
ANIMAL HEALTH DIRECTORATE  
DEPARTMENT OF INFECTIOUS AND PARASITIC DISEASES



HELLENIC REPUBLIC  
MINISTRY OF HEALTH  
NATIONAL ORGANIZATION FOR  
MEDICINES

# **Lumpy Skin Disease Experience in Greece**

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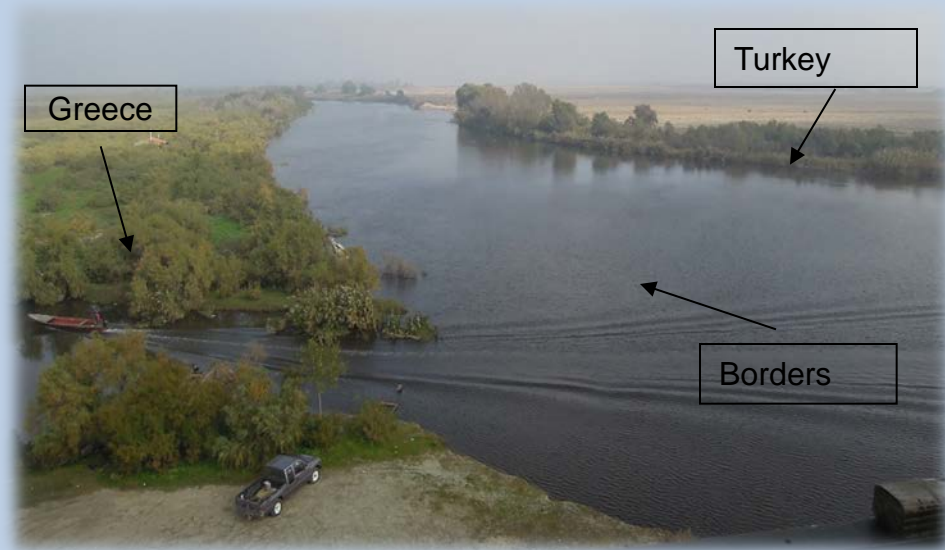
CVMP and IWP Focus Group on Lumpy Skin Disease Vaccines  
European Medicine Agency, 31 January 2017, LONDON, UK

# First LSD Outbreak in Greece

- **18 August 2015** Suspicion
- **2 Beef Holdings: 72 & 75 animals**
- **free grazing** within the Evros Delta River National Park
  - within 15 km from the closest confirmed LSD outbreak in Turkey (ADNS)
- **Clinical examination:** nodules in the neck and elsewhere in the body (without ulcerations), nasal and eye discharge
- **20 August 2015**  
laboratory confirmation of LSD
- **24 & 25 August 2015** Depopulation



# Delta of Evros River





# Overview of Measures

- **Legal Framework:** describes measures and actions
  - European Law: Directive 92/119
  - National Law : Presidential Decree: 138/1995 (harmonize Dir 92/119)
  - National Contingency Plan : Ministerial Decision, 258933/18-8-2008

## Control Measures Overview

- Measures in Case of Suspicion and Confirmation
- Measures are applied through Regional Decisions
- Official Information of the owners (tasks, obligations)
- Involvement in the control of the implementation of measures (Police, Coastguard, Municipality, Army)
  - Movements prohibition or restriction
  - Zoning (protective and surveillance zone)
  - Total Stamping out
  - Cleaning and Disinfection
  - Vector Controls

## Emergency Vaccination



# 1<sup>st</sup> wave of LSD (20 Aug - 15 Dec 2015)





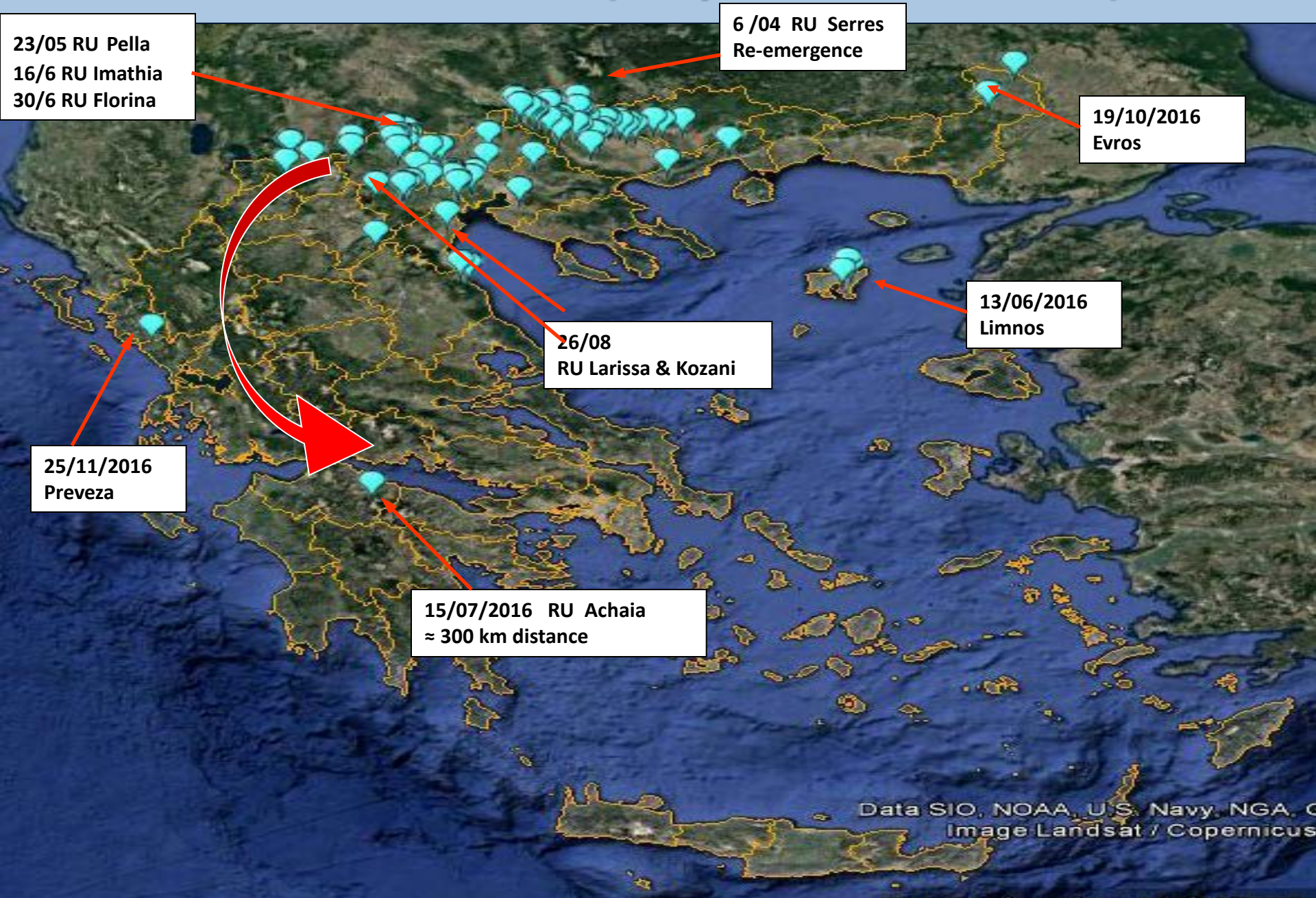
# Re-emergence of LSD on 6 April 2016



- An interval of more than 3 months since the last LSD outbreaks in 2015
- Regional Unit of Serres where vaccination coverage was 60%
- 2 Herds: 1 beef free grazing and unvaccinated
- !! 1 dairy herd vaccinated on 26<sup>th</sup> November 2015 !!

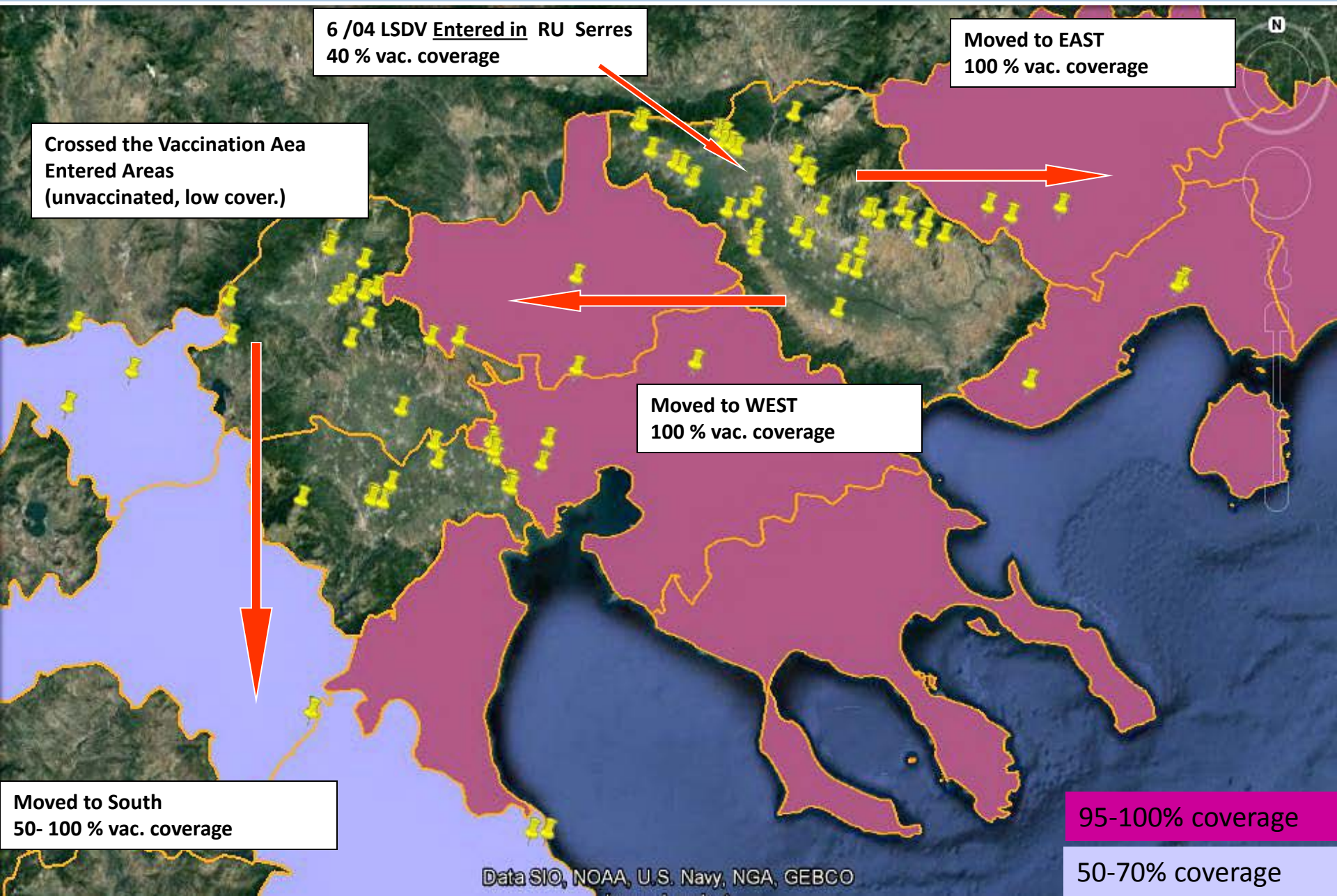


# 2<sup>nd</sup> wave of LSD (6 Apr – 25 Nov 2016)



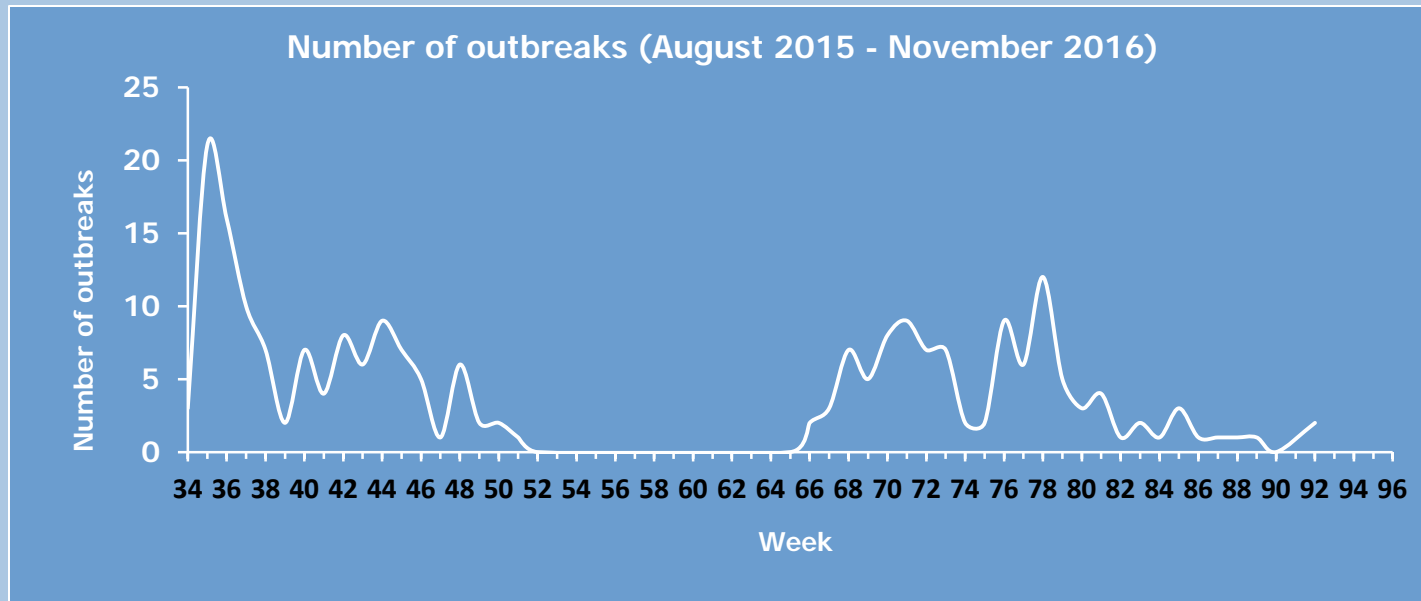


# LSD Distribution Scenario 2016





# Overview of the Epizootic



## 2015

- 117 outbreaks
- 7 Regional Units
- 20 Aug - 15 Dec (4 months)
- 24 out of 117 outbreaks: vaccinated herds suspicion was notified less than 28 days post vaccination
- 6080 animals culled

## 2016

- 104 outbreaks
- 15 Regional Units (11 new)
- 6 Apr - 25 Nov (7 months)
- Unvaccinated animals or Vaccinated but not immunized at the time of infection (except 1 herd)
- ~ 6000 animals culled



# Decision on Emergency Vaccination

Since the beginning of the epizootic, emergency vaccination was decided and European Commission was informed

- Evros Area historically suffers from animal diseases crises (e.g. Sheep Pox in 2013-2014, BT 2014 e.t.c)
- Devastating effects for the local farming industry with negative impact to local Society and Economy
- High costs for the State : Cost of control measures  
Stamping out, Vaccination, Compensation  
Cost for Veterinary Services
- The involvement of vectors on the transmission of the disease complicates the control: environmental conditions (wetlands), type of production (free grazing beef cattle)
- Unclear if the stamping out policy alone was sufficient to stop the disease spread





# Legislative limits on Vaccination

“Each rule has its exception”



2 rules with 2 exceptions

➤ ***Dir. 92/119 artc.19:***

Preventive Vaccination in EU is not allowed

➤ ***Dir. 92/119 artc.19:***

Emergency Vaccination may implemented as a supplementary control measure taken when the disease broke out

## No marketing authorization of LSD vaccines in Greece or in EU

➤ ***Dir. 2001/82 artc. 5:***

Veterinary medicinal products are not allowed to be placed on the market of a MS, unless a marketing authorization has been granted by the CA of that MS.

➤ ***Dir. 2001/82 artc. 8:***

In the event of serious epizootic diseases, Member States may provisionally allow the use of immunological veterinary medicinal products without a marketing authorization, in the absence of a suitable medicinal product and after informing the Commission of the detailed conditions of use.



# Vaccines



- **Homologous live attenuated virus vaccines:**
  - “Lumpy Skin Disease Vaccine for Cattle”, Onderstepoort Biological Products, OBP, South Africa (Neethling type)  
2 ml/per dose, subcutaneous
  - “Lumpyvax” by MSD Animal Health-Intervet, South Africa (SIS type)  
1 ml/per dose, subcutaneous
- **Compulsory vaccination of all susceptible species** (cattle, buffaloes)  
Vaccination from age 0 according to the instructions (animals from unvaccinated cattle)
- **28 days standstill of vaccinated animals** (3 weeks to full disease protection +1 week to cover the maximum disease incubation period)
- **Annual booster vaccination**
- **An electronic application (online database)** has been developed for registration of vaccinated animals and farms  
(connected with the central data base of Reg. 1760/2000)



# Vaccination Plan

- Vaccination Started: on 5/09/2015 RU Evros  
after the first confirmation of LSD: 20/08/2015 RU Evros

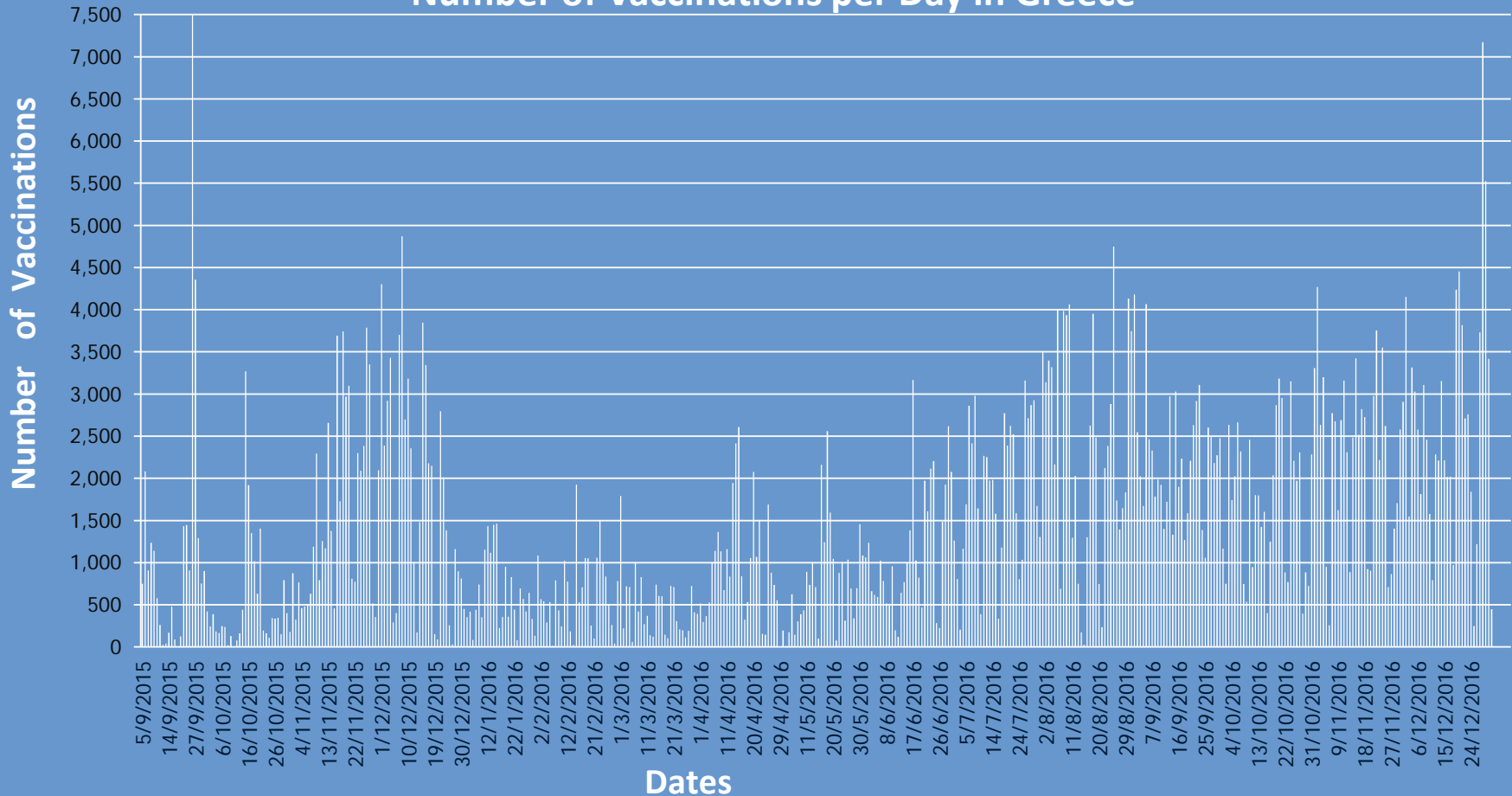
At the beginning around the outbreaks in affected Regional Units  
Xanthi, Rodopi, Kavala, Chalkidiki,

- In October 2015 creation of buffer zone in free areas and progressive extension according to the availability of the vaccines  
1<sup>st</sup> Priority: Thessaloniki, Drama, Serres, Kilkis,  
2<sup>nd</sup> Priority: Imatia, Pella, Pieria
- In May 2016 when the disease crossed the buffer zone:  
The Vaccination of **total mainland** firstly and the **islands** later decided

Vaccination Campaign is under the official control of the Veterinary  
Authorities

# Vaccination Campaign (August 2015- Dec 2016)

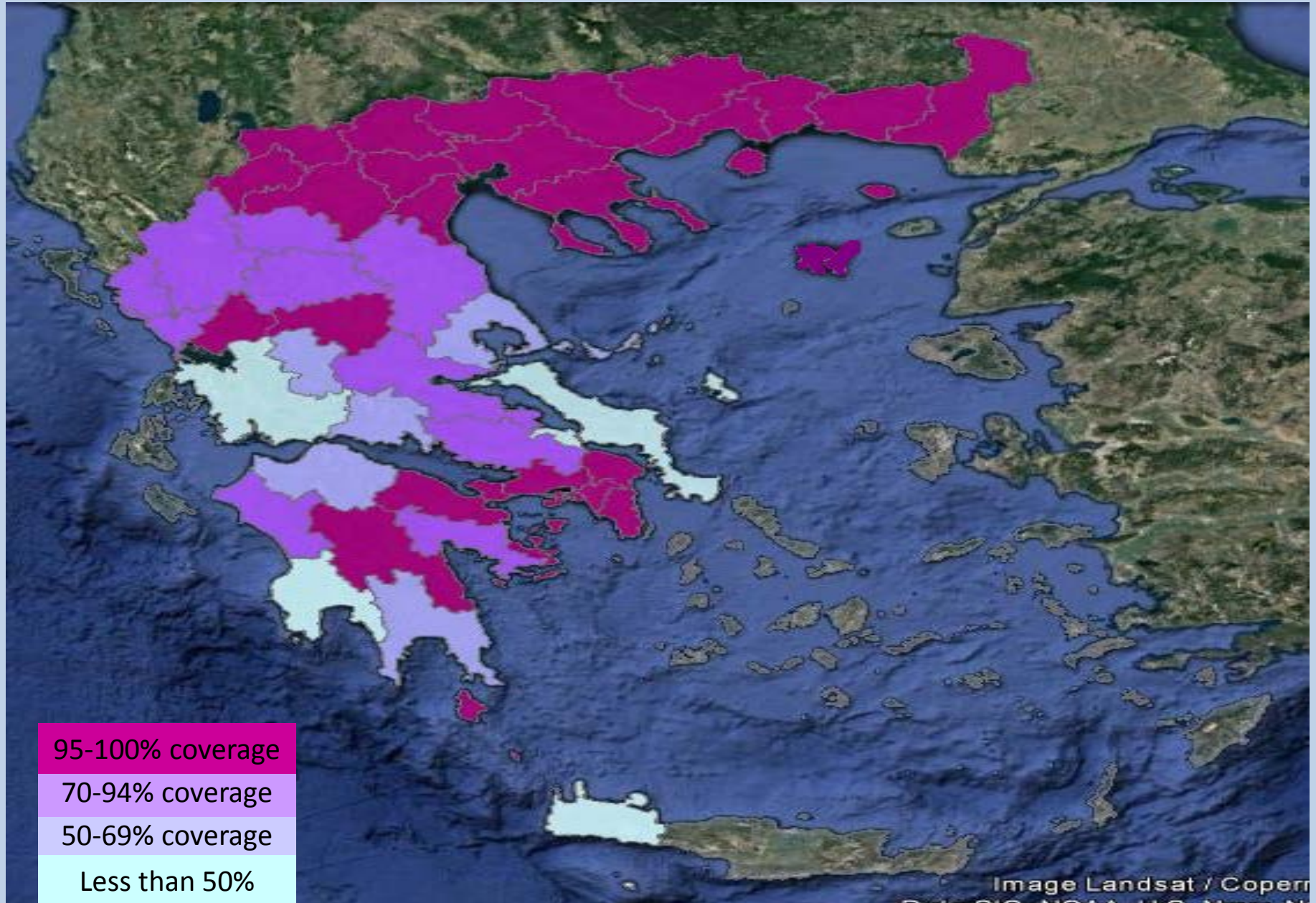
Number of Vaccinations per Day in Greece



**467 days of Vaccination / ~ 690.000 vaccinations**  
**Vaccinations per day 1.462 mean (2min, 7.507 max)**



# Vaccination Coverage Dec 2016



# **Adverse Effects and Reactions to the Vaccine**

## **Common expected findings**

(Information provided by vets and farmers)

- **Oedema and pain around the point of injection**
- **Local reactions with nodules around the point of injection**
- **Dairy Cattle seems to be more sensitive to develop local reactions**
- **Drop of milk production**
- **Abortions**

# Cases of generalized symptoms

During 2015- 2016 **221** outbreaks have been confirmed  
**69 concerned vaccinated animals**

62 outbreaks suspicion was notified less than 28 days post vacc.

4 outbreaks, the suspicion notified 30 to 52 post vacc.

1 outbreak 5 months post vacc (1 infected / 379 animals)

2 outbreaks concerned calves coming from vaccinated cattle

**3 out of 69 outbreaks vaccine strain** was indentified, all the others  
were field strains

Stamping out was implemented to all bovine animals in the herds  
(pick period of the epizootic, risk to wait 21 days the results of  
sequencing and phylogenetic analysis)

**2 suspicions : the vaccine strain identified and the measures lifted**



# Practical Aspects-Difficulties-Limitations

## **Official Control and Supervision** by the Veterinary Authorities

The whole procedure of vaccination is under the control of the official veterinary authorities (delivery at the airport, storage, distribution, vaccination, destroy of residual quantities)

High costs for Veterinary Authorities

Managerial difficulties, coordination, control

## **Strict Measures for vaccinated animals :**

- Restrictions of the movements: animals were not allowed to be dispatched outside vaccination area
- 28 days post vaccination standstill
- Restriction to trade activities of live bovine animals, their products, animal by-products



**Unwillingness of stakeholders to implement vaccination**

**Uncertainties and lack of information complicated the decision making**

# Challenges for the future

## Effectiveness of Vaccination

Experience shows that vaccination is the only effective measure against the disease especially preventive vaccination

- But to what extend ? When ?? and for how long ? According to which criteria?
- Is the absence of the outbreaks a verification of the absence of the LSD?

Subclinical Cases, Mild Clinical Signs,

Animals not develop Immunity, Under notification

- Clinical examination is the only available tool to estimate in large scale the situation on the field

## Scientific Research

- effective and safe vaccines
- vaccines support DIVA protocol
- vaccine vs field strain: **Greek NRL: DIVA Real Time PCR**
- presence and excretion of vaccine strain
- immune response to vaccination
- duration of immunity
- immunity in calves
- Viraemia in vaccinated animals

# Acknowledgements

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# Thank you for your attention



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