

# Lumpy Skin Disease Vaccination strategies

Nadav Galon

4th LSD Coordination Meeting  
for South-East Asia  
Bangkok  
November 2023

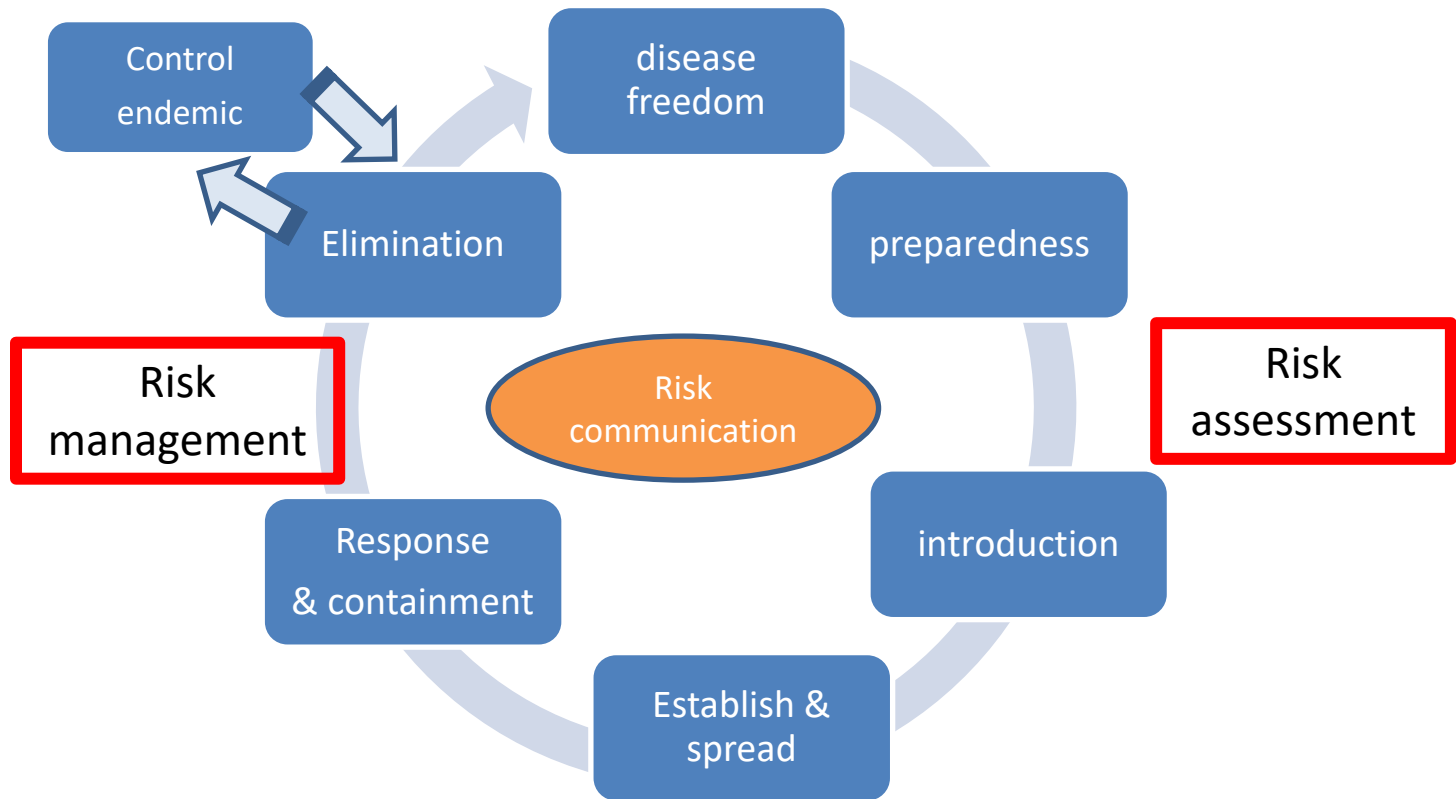


# “What is the difference between Strategy and Tactics ?



Perspective”

# TAD outbreak process



# LSD Control Measures

Measure	Effectiveness	Achievable ? practical ?
Zoning	<b>high</b>	when, length, inspection, enforcement, “by-pass”
Movement control	<b>moderate</b>	census, network, IT system, HR, ..vector born
External (introduction) bio-security	<b>low</b>	Farm definition, roaming, pasture, work, vector
Internal on-farm bio-security	<b>low</b>	Farm definition, roaming, pasture, work, vector
Vector control	<b>low</b>	Climate, cost, food residues, environment
Stamping out	<b>low</b>	Only in very early and very isolated outbreaks
<b>Vaccination</b>	<b>HIGH</b>	<b>Effective, tested, coverage, cost-benefit</b>
<b>Risk communication</b>	<b>HIGH</b>	<b>Targeted, connecting gov’t- farmers- consumers</b>

# Vaccination justification

Risk Communication- strong socio-economic impact



:



Israel \$ 3,000

vs

\$ 3

Parameter	Israel 2017 (Euro)
Milking cow	3,000
Replacement- pregnant heifer	3,000
Downer/ salvage slaughter	3,000- 200
Abortion (4.5 months)	1,500
Milk	0.40
SCC penalty	2/ 100 L
Beef cow	1,500
LSD Vaccine dose	2.5

# Secure budget for LSD

## Cost : Benefit

- Budget for
  - Vaccine procurement
  - Vaccination campaign
  - Compensation
  - Other control means
- Cost of disease
  - Direct
  - indirect



# Early detection

- In country, in region
- Preparedness; knowledge, awareness
- Passive/ active surveillance
- Remote border areas
- Few official inspectors, few clinicians, no mandatory visits
- Cattle gathering abilities; paddocks, cattle chutes, workers
- Sampling , shipment; incorrect – false negative
- Risk- communication- **Effectiveness- High**

“If you see something-  
say something”

# LSD Vaccination – where & what ?

- **Preventive / Responsive**

- Planned ahead / “surprising” outbreaks- no time to prepare
- All susceptible / partial

- **Vaccine doses- how much is enough**

- Central / Regional storage
- Immediate / Reserve

- Shelf life 1-2 years



# Anticipate cattle movements

## Large Ruminant Movement Pathways in Asia & the Pacific

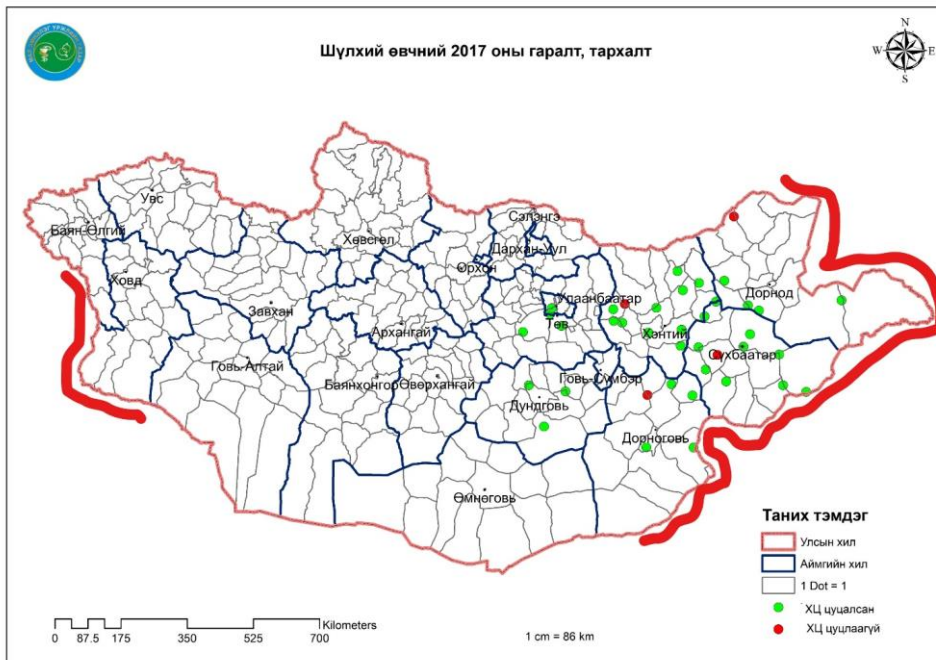
## Live cattle markets



# WHERE to expect the first outbreak ?

## border-high risk areas- (“hot zones”)

### 2000-2017



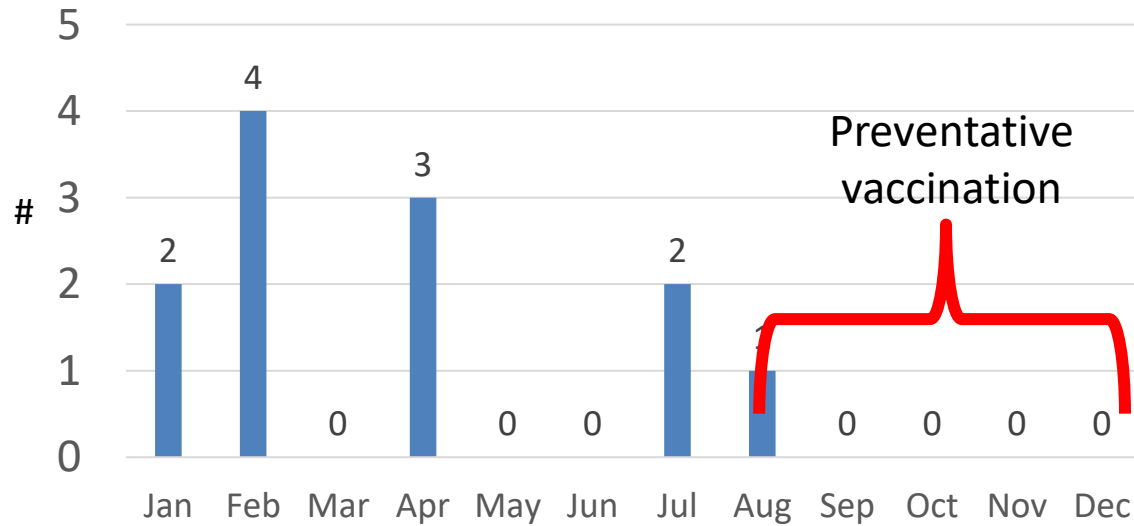
Border region	outbreaks
East+ SE	7
South	0
West	5
North	0
In land (UB)	1



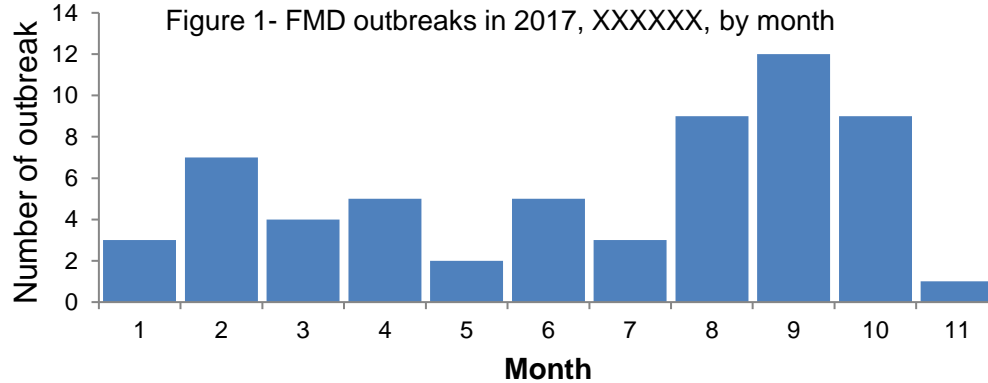
“Hot Zone”

# WHEN to expect the first outbreak ?

## Index case - early detection



# WHEN to expect more outbreak ?



LSD - seasonal / correlated to vectors activity

index outbreak – coincides with increase in vector population/ activity

“Surprises” / “Black Swan” / import - “vertical incursion”

# LSD Vaccination – by whom?

- Rate of vaccination
  - Public sector / Vet services
  - Private vets
  - Emergency Recruiting option / plan (\$)
- Payment
  - Gov't- free to farmer
  - Farmers/herders – reduce compliance
  - Adverse reactions- compensate

# “Neethling Response”- risk communication



“it is not a disease”



< 0.5% (1 out of 200)

1-10 d post vaccination

Mild & transient - several days

Clinically different - smaller

Lab technique to differentiate from field case

# Who to Vaccinate – Herd level

- One Shot- immunity for 1 year
- Recovered- immuned for life (?) - not sure- vaccinate
- Non-clinical/ incubating- vaccinate
- Clear clinical - no need to vaccinate
- Young- from 3 m old of vacc. Dam / 1 d in non-vacc. dam
- Pregnancy- safe
- High value; dairy, breeding, work, show- priority

# Vaccination coverage

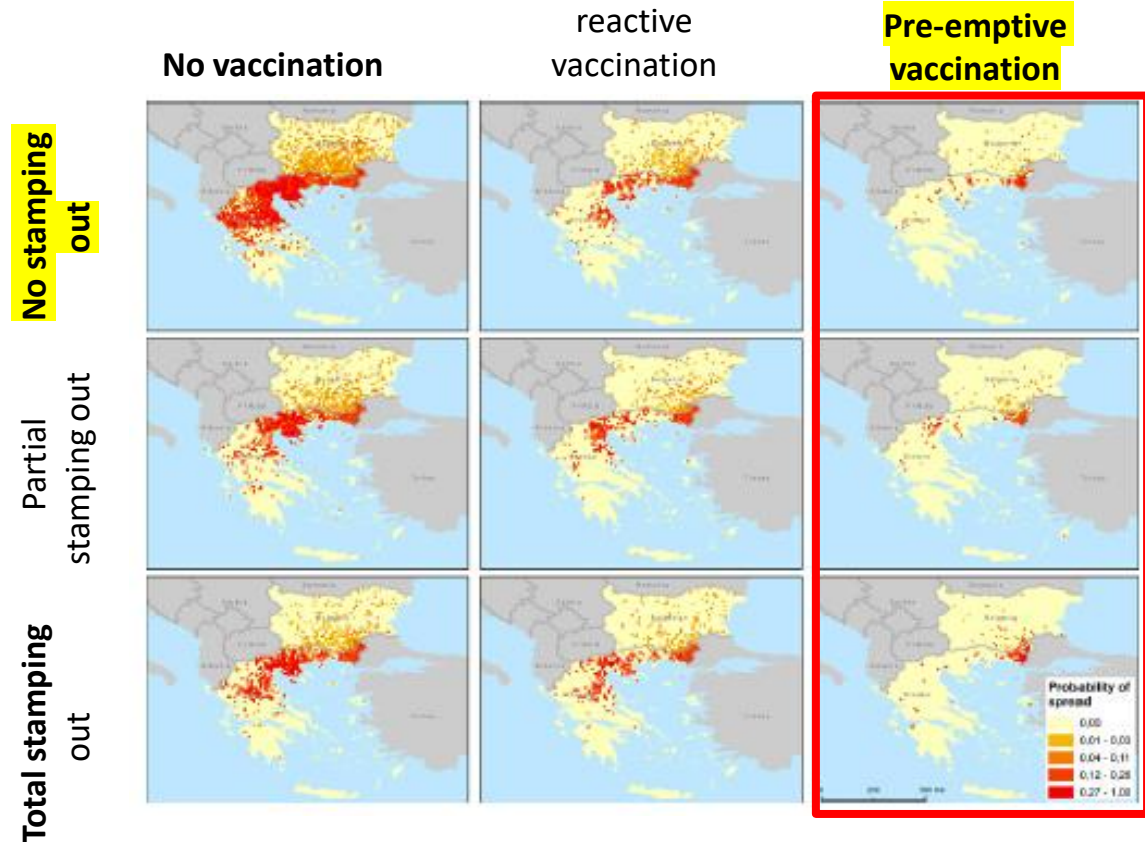
- Epi'-unit definition
  - Large/ commercial “isolated” herds
  - Larger than a herd
  - Contact between villages, fields
  - Vectors fly beyond municipal borders
- Plan to vaccinate “blocks”, “belts”, not “circles”
- Extend 20-50 km beyond last (reported) clinical case



# EFSA Urgent Advice on Lumpy Skin Disease

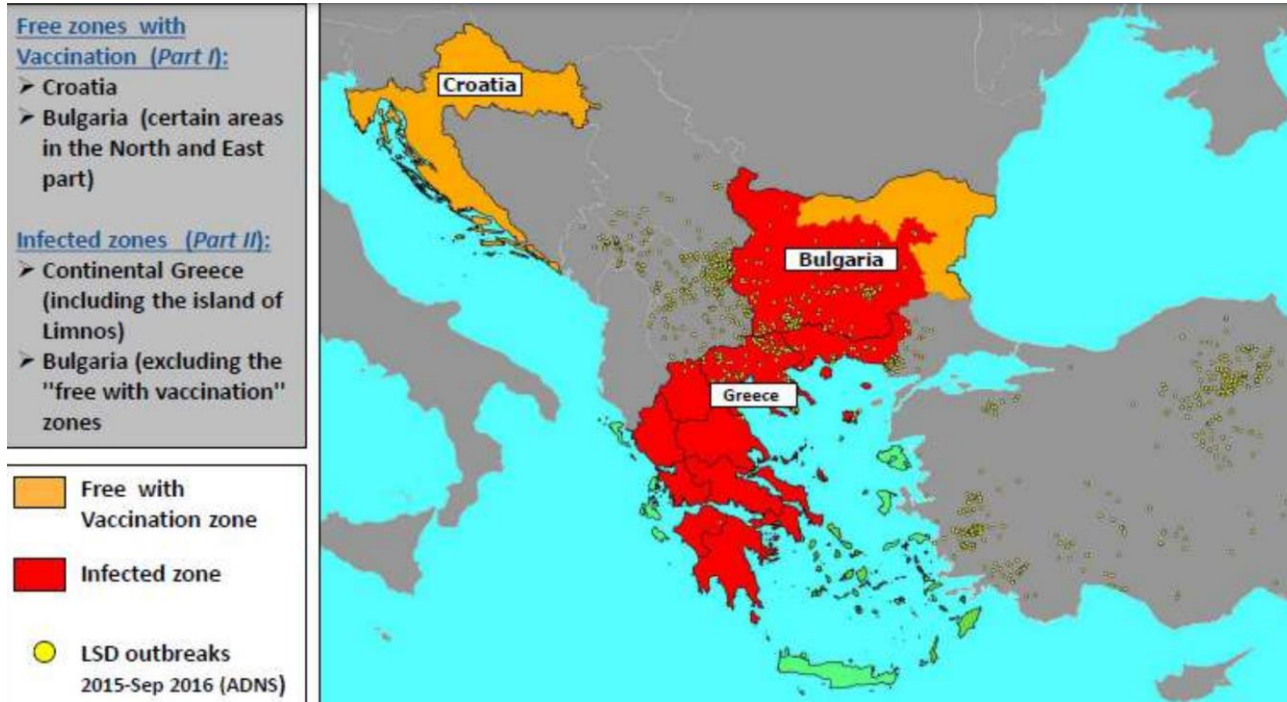
(EFSA journal, 2016)

- Modelling of the outbreak in Bulgaria & Greece
- When vaccination is used the stamping out has only minimal effect



# Southern Europe (Balkan) Eradicated LSD

– Can it be repeated ?



# Import- high risk of introduction

- Trade- can't stop for long
- Formal / informal
- Border check points - Special attention
- Preventive vaccination
  - Country of origin
  - Quarantine – at the border / on farm
- Clinical monitoring
- Risk communication – live animals and products

# Vaccination Monitoring

- 3 R: Routine - Records -Reports
- Hard copy / electronic
- Data bases / data transfer – central level p.o.v
- IT – Information Technologies
- Transparency
- Surveillance & Analysis
- Incentives to all stakeholders for compliance

# Post Vaccination Surveillance

## Clinical / Serological

Parameter/ type	Clinical (visual)	Serological
Objectives	Identify introduction Find index case Detect spread to new herds/ regions	Vaccination compliance Immune response Protection level Proof of freedom
Ease to perform	Simple to visualize Train to sample nodules Capable labs	Sample Cold chain Labs
Cost	low	High
when	Preparedness During/ between outbreak response	Preparedness/response - vaccine evaluation During outbreak- investigation

# Future vaccination traceability

- Digital syringes
- Accurate mass vaccination
- Easy safe and robust
- Herd, Animal ID / count
- Data automatic collection
- Data transfer to chosen stake holders
- Data analysis – vaccination coverage gaps



# Considerations for vaccination strategy

- Assess your country objectives
- Exporting / importing **Terrestrial Animal Health Code**
- Size of susceptible population
- Risk zones, seasonality
- Budget constraints
- Immediate response capability
- Contingency plan

# Take Home Messages

- ✓ LSD vaccines are safe and effective
- ✓ LSD vaccination works
- ✓ Don't copy paste
- ✓ Plan – Execute - Monitor
- ✓ Don't reinvent the wheel –adjust it to your scenario

