

Lumpy Skin Disease

Practical Prevention and Control

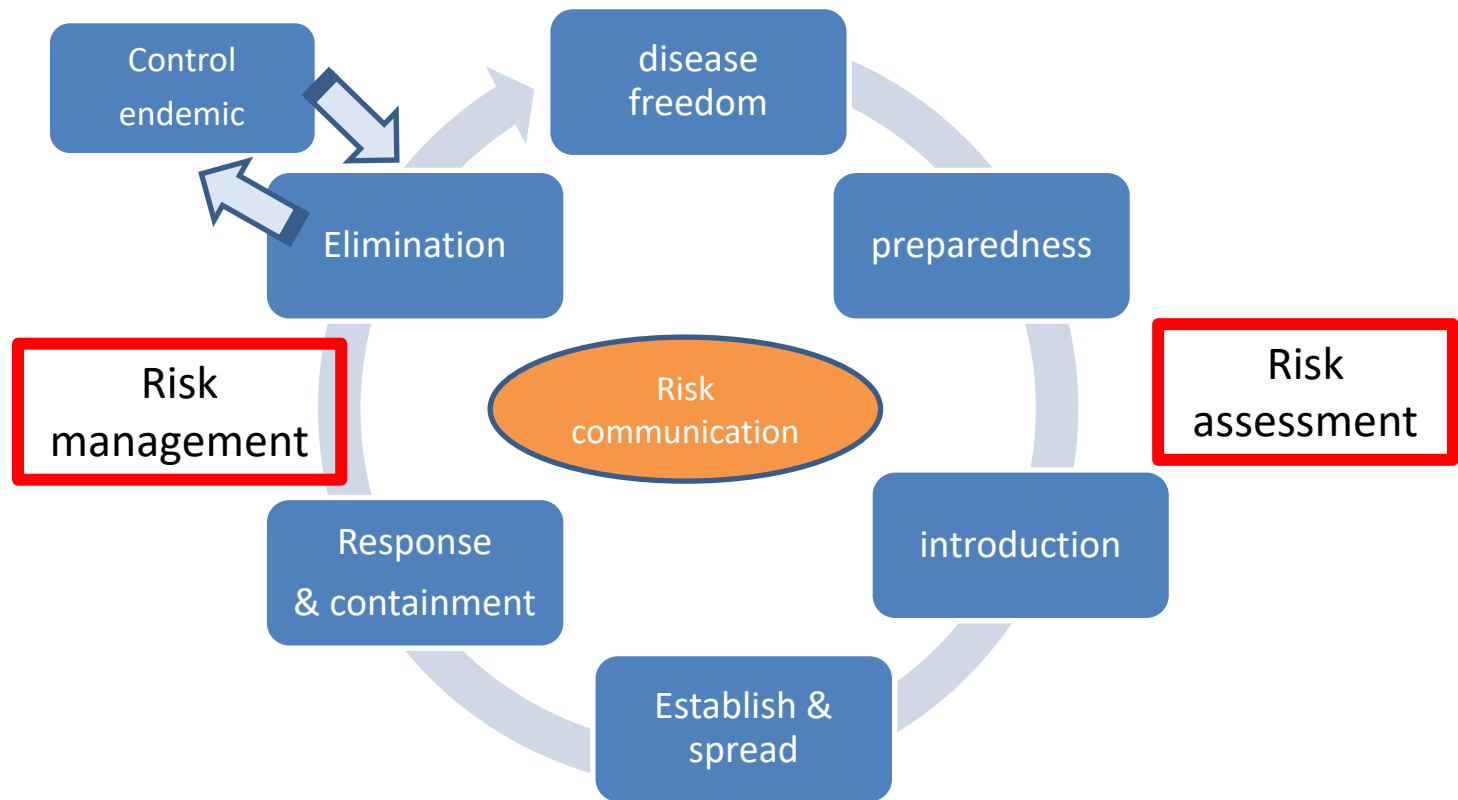
Nadav Galon

SE Asia OIE meeting

11 June 2021



TAD outbreak process



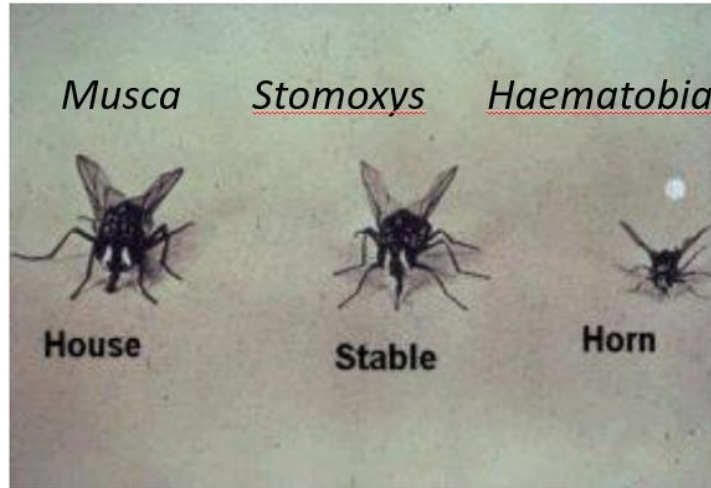
LSD Control

- Early detection
- Vector born- vector control
- Bio-security
- Stamping out
 - Full
 - partial
- Vaccination
 - Preventive
 - Responsive

Transmission- mechanical vectors

Where there is cattle - there are flying-biting flies

- Insects
- abundance
- life cycle
- breeding
- feeding
- Wintering
- syringes



Vector control

- Various vectors; different breeding sites, season, housing...
- Repellents or insecticides
- Registration; on animals, environment, effect on fauna
- Short effect; Reduced by rain, contact with water
- Mild winter– FBI active in winter/ year round
- Cost- Benefit ?
- **Effectiveness- LOW**



Biosecurity

- LSD spread by F.B.I= Flying Biting Insects
- Difficulties
 - Herd size- Backyard herds; 1-10 heads
 - Herd density
 - Grazing, roaming, work animals
 - Free roaming, nomadic
 - Communal grazing
- General disinfection- mostly ineffective
- **Effectiveness- low**

LSD is not FMD



Cattle Movements control

- legislation, regulation, VS, “green Police”
- Permit prior to movement/ report after
- Inspection, enforcement – limited recourses
- District, region- can be effective
- Remote areas, small villages, roads accessibility
- Vector born disease
- **Effectiveness- moderate**



Stamping Out- Pro's & Cons

- **PRO's:** can be effective and practical if;
 - First incursion to a defined country/region is detected early enough
 - Infection --- detection period is short
 - Risk of repeated incursions is low
 - Epi' unit can be well defined and isolated
- **CON's:**
 - Expensive: cost of cow compared to cost of vaccine dose
 - Demands much more resources; personnel, time and than vaccination
 - Destructive to farmers livelihood, economy and sustainability
 - public perception and media / political interference

Effectiveness- LOW

Vaccination vs Stamping out

(in face of a continuous/ long term risk)

Parameter	vaccination	Stamping-Out	variables
Direct cost	low	high	Isolated/ wide-spread
effectiveness	high	low	Suitable vaccine
management	easy	difficult	Cold-chain/ disposal
Long term loss	low	high	e.g. Breeding value
durability	6-12... m	short	
flexibility	high	zero	Change/ stop vacc.
Herder attitude	positive	negative	
effect on herder reporting	strong	weak	
Public/ media attitude	min. objection	negative	

Early detection

- In continent, in country, in region
- Preparedness; knowledge, awareness
- Remote border areas
- Few farmers, part time farmers, intensive/ extensive
- 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 Vaccines

- Homologous-Neethling strain
- Heterologous- Sheep/Goat Pox
- Homologous are more effective than Heterologous
- All available vaccines are non-GMP. Safety tested.
- Handling, application; many causes of protection failure
- Coverage; partial / insufficiency- outbreaks
- Regional & Preemptive vaccination approach
- Cost-Benefit analysis- **Most effective**

Controlled Field Trial - Neethling vs Pox-10

	Neethling OBP	sheepox-10X <i>Jovac</i>
# vaccinated	4,222	4,279
# nonclinical	4,192	4,178
% nonclinical	99.3%	98.8%
% clinical cases	30 (0.7%)	51 (1.2%)
mild cases	7	22
severe cases	23	29

“Neethling” strain vaccines

- Modified-live
- protective, safe , cost-effective
- South Africa
 - MSD
 - OBP
- Morocco- MCI
- Turkey
- Others



“Neethling Response”

“Neethling response” -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

Vaccine procurement

- Government tender
- Emergency tender
- Private sector involvement
- Who is paying for the vaccine
 - Commercial farms, herds
 - Small holdings
 - livelihood

Where to vaccinate

- Best option- all susceptible population
- Partial vaccination- Risk based
 - Regional/ district- clear borders, avoid “circles”
 - Before introduction- along borders’ “hot zones”
 - 20-50 Km wide belt-zone
 - After introduction- around infected zone/ region
 - Everywhere- all animals/ value based

Who to vaccinate

- One Shot- immunity for 1 year (at least)
- Recovered- immuned for life (?)
- Non-clinical/ incubating- vaccinate
- Clinical (clear) - no need
- Young- from 3 m old
- Pregnancy- safe
- High value; dairy, breeding, work, show...

LSD is an economical disease

economy has a strong social component



:



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

Risk communication for everyone before during and after the outbreak

- By whom
- To whom
- what
- how
- when

1. Culture dependent
2. Target dependent
3. Interests
4. Incentives



Thank you



Questions?

nadav.galon@gmail.com

EFSA urgent advice on lumpy skin disease

(EFSA journal, 2016)

- Modelling of the outbreak in Bulgaria according to the Israeli data
- When vaccination is used the stamping out has only minimal effect

