



Vaccines and vaccination against LSD

Tsviatko Alexandrov

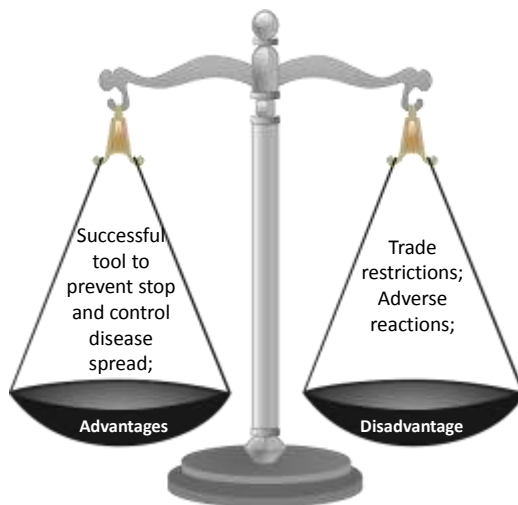
DVM, PhD, FAO International consultant



Vaccination - tool for disease control

Types:

- ✓ Emergency
- ✓ Preventive
- ✓ Prophylactic



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Vaccines: type, availability and an example of use in the EU

Diseases and Vaccines	Avian influenza	Bluetongue	Classical swine fever	Foot and mouth disease	Lumpy skin disease
TYPE					
Live , Inactivated, DIVA	Inactivated and Recombinant virus vectored	Live and Inactivated	Live and DIVA	Inactivated and DIVA	Live
AVABILITY					
EU Bank	?	?	?	Yes	Yes
National banks	?	?	?	Yes	Yes
From industry	Yes	Yes	Yes	Yes	Yes
Produced in EU	Yes	Yes	Yes	Yes	No
Used in EU since 2000					
Year	2000	2008	2017	2001	2015
Country	Italy	Denmark	Latvia	NL	Greece


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Not a single country has managed LSD without vaccination!




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Vaccines against LSDV 5

- Only live vaccines currently available against LSDV – none of them authorised for use within the European Union
- No DIVA vaccines available (Differentiating Infected from Vaccinated Animals)
- Superiority of live attenuated vaccines compared to the killed ones
- A replicating poxvirus generates better immunity than inactivated vaccines

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Choosing a vaccine against LSD 6

- Only vaccines with demonstrated efficacy should be used – vaccine challenge experiment at CODA CERVA
- Live attenuated LSDV containing vaccine provides best protection
- Protection provided by attenuated SPPV vaccines is not as good for LSDV but can be used if sufficient herd immunity is created (all animals are vaccinated)
- Other appropriate control measures such as movement restrictions are in place

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LSD vaccines on the market (1)

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- LSDV containing vaccines:
 - ✓ LSDV Neethling strain by Onderstepoort Biological Products (OBP)
 - ✓ Attenuated LSDV field strain Lumpyvax by MSD Animal Health
 - ✓ Bovivax



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LSD vaccines on the market (2)

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- Sheeppox virus (SPPV) vaccines against LSDV:
 - ✓ Yugoslavian RM65 SPPV vaccine (at a 10 times stronger dose than used for sheep) is commonly used for cattle in the Middle East
 - ✓ Romanian SPPV vaccine for cattle in Egypt
 - ✓ Bakirköy SPPV (3 times sheep dose) used in cattle in Turkey
 - ✓ SheepPox-LSD vaccine produced by FGBI ARRIAH at a dose of 104 TCID50
- Gorgan goatpox vaccine (Lumpyshield, Jovac, Jordan) has been demonstrated to provide good protection against LSDV
- Confusing exception: Kenyan SGPV O-240 and 180 strains are used for cattle in some African countries - despite the name these strains are LSDV

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Vaccination regime and adverse reactions

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- Regional vaccinations preferred over ring-vaccination (radius > 50 km diameter)
- Annual vaccinations with >80% vaccination coverage (all animals)
- All animals are vaccinated including pregnant females and young calves
- Local reaction at the vaccination site should be accepted
- Attenuated LSDV vaccines cause a general reaction in a minority of vaccinated animals (Neethling disease)
- Attenuated SPPV and GTPV vaccines only rarely cause adverse reactions

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Adverse reactions

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Adverse reactions

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Справка животни Ферма "Пали Лула"					
N	дата	Количество издоено мляко	средно количество издоено от крава	Брой издоени животни	
1	15.07.2017	2920	25,6	114	
2	16.07.2017	2960	26,0	114	
3	17.07.2017	2955	25,9	114	
4	18.07.2017	2980	26,1	114	
5	19.07.2017	2930	25,7	114	
6	20.07.2017	2890	25,4	114	*ден на ваксинация срещу Заразен нодуларен дерматит
7	21.07.2017	2810	24,6	114	
8	22.07.2017	2300	20,2	114	
9	23.07.2017	2330	20,4	114	
10	24.07.2017	2286	20,1	114	
11	25.07.2017	2338	20,5	114	
12	26.07.2017	2318	20,3	114	
13	27.07.2017	2342	20,5	114	
14	28.07.2017	2310	20,3	114	
15	29.07.2017	2395	21,0	114	
16	30.07.2017	2404	21,1	114	
17	31.07.2017	2419	21,2	114	
18	01.08.2017	2398	21,0	114	
19	02.08.2017	2456	21,5	114	
20	03.08.2017	2492	21,9	114	
21	04.08.2017	2532	22,2	114	
22	05.08.2017	2529	22,2	114	
23	06.08.2017	2639	23,1	114	
24	07.08.2017	2619	23,0	114	
25	08.08.2017	2630	23,1	114	
26	09.08.2017	2641	23,2	114	
27	10.08.2017	2649	23,2	114	

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Technical specifications for LSD vaccines

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- to have live, attenuated, homologous (in the EU) strain of LSDV
- to provide immunity against LSD;
- to be sterile, safe and effective
- to be applicable for bovines of all ages the expiry date of the batch to be at least 12 months since the production date;
- to be produced in accordance with the OIE Diagnostic manual
- the leaflet for use to have text in the language of the country where vaccination is to be applied

Storage of vaccine

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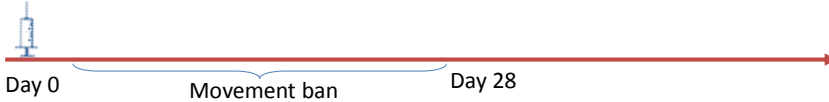
- The vaccine must be stored at 2°C - 8°C.
- Temperature must be recorded with calibrated thermometer twice a day (once in the morning and once in the afternoon)
- Once the bottle is opened the vaccine must be used the same day.



Vaccination against LSDV



The best is to vaccinate before the start of the vector activity



- In non previously vaccinated herds - Vaccination of bovines of all ages
- Vaccination of calves from previously vaccinated mothers 3 - 4 months of age
- Annual vaccination (at least three years)



Subcutaneous application of the vaccine in accordance with the instructions from the manufacturer

LSD vaccination in South East Europe in 2015 – Situation as at Dec 2015

Vaccination in:
 > Greece (Northern part), not full vaccine coverage every where

- Vaccination area (not full coverage)
- LSD outbreaks as at 1 Jan -31 Dec 2015 (ADNS)

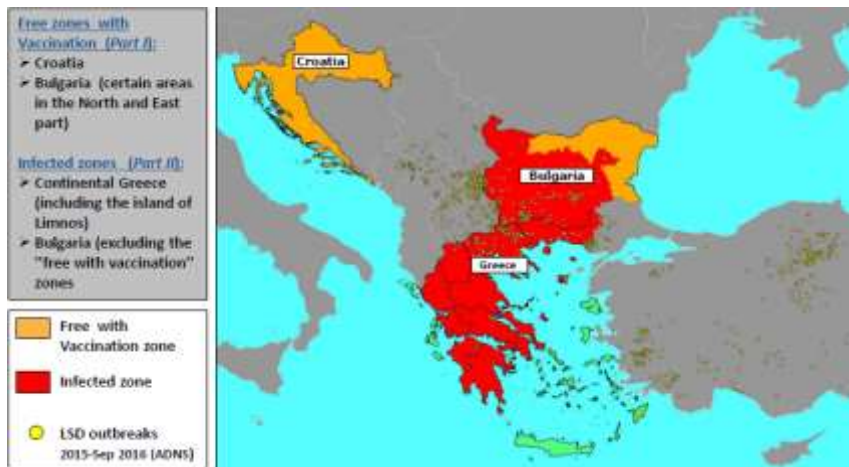






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LSD zoning (Dec. 2016/2008)



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Main points for strong CP for LSD

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- ✓ calculation of all direct and indirect costs for all the different control strategies for different scenarios and the consequences;
- ✓ Be ready for many outbreaks at the same time
- ✓ Be ready with finalized tender procedure/contract for immediately supply of all vaccine needed or vaccine bank available;
- ✓ Be ready to vaccinate before the disease enters the country (the example of Croatia) or
- ✓ to perform emergency vaccination immediately after the first outbreaks

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Thank you for the attention!