

# Vaccination against lumpy skin disease in Western Balkan

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### Major challenges for effective control and surveillance of LSD

- Socio-economic impact of LSD is massive throughout the whole cattle farming industry Small-holders and poor back-yard farmers being worst hit
- Seasonal movement of cattle is difficult/impossible to halt
- ► Holdings are located in very short proximity to each others and using communal pastures making the whole village as one epidemiological unit thus affects the feasibility/affordability of total stamping-out policy
- Small-holdings or beef cattle in remote location at the high altitude in the mountains
  - ▶ Major logistic challenge, time-consuming transport, roads are bad/unsafe in some weather conditions
  - ▶ In some cases VS are lacking vehicles or other means of transport or petrol
- Disposal of infected carcasses on-site is hampered by availability of suitable land, presence of ground water and availability of excavators





### Two equally effective live attenuated LSDV vaccines available

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- Lumpyvax

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- Vaccine is expensive with varying price (approximately € 1.4-1.8)
  - ▶ Tendering process prior to purchase of vaccine, slowing the onset of vaccination campaigns
  - ▶ Both manufactures have their requirements how they want payments
  - ▶ It may take some weeks for producers to provide the vaccines
- ▶ LSDV is stable and survives in the environment vaccination coverage should remain 100%
  - New animals should be immunized before introduction to affected farms
  - Calves from vaccinated/naturally infected mothers should be immunized at the age of 3 to 4 months –
    individually or during next round of vaccinations
- Feasible package size to suit the numbers of vaccinated animals to avoid waste of vaccines
  - ▶ OBP vaccine 25 and 50 doses vials
  - ▶ MSD Lumpyvax 10 and 100 doses vials
- Are the vaccines produced according to Good Manufacturing Process (GPM) standards?
- ▶ Adverse reactions caused by two vaccines could be investigated in Croatia (no interference by the field strain)

# Sheeppox vaccines used in cattle against LSD

- Yugoslavian SPPV RM-65 (Jovac/Jordan, Abic/Israel) (10 x sheep dose)
- ► Turkish Bakirköy SPPV strain (3 to 4 x sheep dose) (Panpox, Pendik Institute)
- Romanian SPPV strain in the Middle East
- KSGP O-240 and O-180 strains have been characterized as LSDV these vaccines are not recommended for cattle against LSDV until safety and efficacy have been tested using challenge experiments

### Attenuated Goatpox vaccine – Gorgan strain

- ► A commercially available GTPV vaccine, same strength for cattle and goats
- ▶ Good protection in cattle against highly virulent Ethiopian LSD field strain (Gari et al 2015)
- ▶ Efficacy has been evaluated by scientist at Coda Cerva publication is ongoing
- ▶ Large scale field experiments in cattle ongoing in Lebanon and in sheep against SPPV in Jordan
- ▶ Ideal product for those regions where both LSD and GTP coexist
- No side effects in cattle
- One vaccine for both cattle and goats reduces the price
- ▶ Why GTPV is better than SPPV against LSD likely be genetic





#### Inactivated vaccine in a pipeline

- Development work is on-going by a producer
- Challenge testing in controlled environment by Coda Cerva publication of the results ongoing
- Protection is not as good as provided by live LSD vaccines
- ▶ Ideal for trade of fully susceptible cattle from disease-free to affected countries
- Vaccination of animals in a country of origin 3 to 4 weeks before transportation and on arrival a booster with a live vaccine

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#### **RESEARCH ARTICLE**

**Open Access** 

Comparative innocuity and efficacy of live and inactivated sheeppox vaccines



## Success of the vaccination campaign depends on

- ► Efficacy of the vaccine product and sufficient coverage (80-100%)
- Capacities of veterinary services to carry out vaccination campaign, other control/eradication measures and surveillance programmes
- Electronic database including cattle ID/ vaccination/health records/ cattle movement history
- Control of cattle trade and cattle movements
- Stamping-out policy in place
- Diagnostic capacity of national reference laboratory









### Cattle ID, vaccination, health and movement database

- Quality of the existing databases vary between excellent to very basic in affected countries
- Often separate databases for ID and movement, vaccination records and health records
- Should be combined to one <u>user-friendly</u> system
- Challenges:
  - ► Farmers are responsible of covering the costs the registration process (calves 21 days after birth) and the ear tags
  - ▶ In practice some animals may lose their ear tags
  - Database may contain animals that do not exist any more Cattle slaughtered for own use are not deleted from the database
  - Register should comprise also cattle trader facilities, cattle market places, permanent and temporary slaughterhouses
- Database should be on the top of the priority list for government funding and for international projects carried out in the region







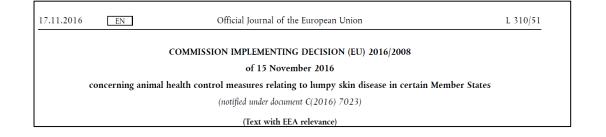
### Struggle to control cattle movements

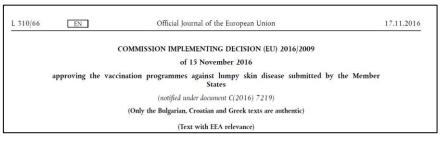


- Cattle movements although strictly regulated by the EC directives and national legislation
- Ban the cattle markets and exhibitions
- Unauthorized cattle movements occur within affected countries and across the borders
  - ► Farmers may own grazing lands and families are divided on the both sides of the borders and price of cattle determinates the direction of transboundary movements
  - Traditional farming and seasonal grazing practices are difficult to suddenly halt and if prevented is likely to become swiftly an animal welfare issue
- Limited efficacy of the short distance movement restrictions due to vector transmission, high cattle density in the village and communal grazing
- Necessary legal powers should be in place to cover the actions if unauthorized animal movements are caught on the move
- Underlines importance of <u>regional</u> mass vaccination

### Game changers for eradication of LSD within EU MS

- EC vaccine bank for LSD allows countries to initiate swift vaccination campaigns
- Recent revision of EC directives/implementing decisions facilitate preventive vaccinations in at-risk countries
  - ▶ free with vaccination zone introduced (along with infected zone)
  - Reduced impact on trade of safe or low risk products (meat, milk)
  - trade of live vaccinated bovines possible with requirements (bilateral agreements)
- Croatia started in in late September 2016 and currently 95-100% of cattle are vaccinated in selected at-risk zones
- Preventive vaccination is highly recommended at high-risk countries





# Harmonized regional vaccination provides best protection

- ▶ It's highly likely that vaccinations cannot be stopped for years to come
- Harmonised regional vaccinations is ideal because
  - Unauthorized transboundary cattle movements
  - ▶ Traditional farming practises Vaccination prior to/from moving cattle to summer/winter pastures
  - ► Cattle ID and vaccination record database throughout the region are not yet leak-proof
- Some open questions and practical issues to be investigated:
  - Are annual vaccinations really required? Would vaccination every second year be sufficient?
  - Can LSDV vaccine be administrated simultaneously with the other obligatory vaccines and does it interfere
    other cattle testing regimes (such as intradermal tuberculin testing)
  - ▶ What would ideal timing to vaccinate those calves that born after the vaccination campaign once a year campaign or individually when coming to age of 3 to 4 months

#### Surveillance programmes in the Western Balkan

#### Strengths:

- Good awareness levels in general by all stakeholders of the cattle farming industry
- ► Notification and information exchange has been swift and transparent by all affected countries across the region
- ▶ Effective vaccine is available and veterinary services in the region are experienced to carry out vaccination campaigns
- National reference laboratories have already good diagnostic capacities and training on diagnostic methods is well organized (IAEA/FAO, Coda Cerva, Pirbright and collaboration between neighbouring countries)



#### Surveillance programmes in the Western Balkan

#### Challenges:

- Vaccination of the whole cattle population has not been completed in all affected countries
- ▶ Fully functional cattle ID/vaccination/laboratory database in some cases still lacking
- Control of cattle movements is challenging both transboundary and within the countries
- Veterinary services are under exceptionally heavy workload
  - Other disease outbreaks
  - ▶ Lack of funding for more staff, vehicles or other suitable means of transport, as well as petrol
- Consequently, the basic veterinary infrastructure is not able to carry out effective surveillance

#### What next?

- ▶ Threat of spread of the disease from the East
- ▶ In the countries at risk need to enhance preparedness by
  - Providing training and raising awareness
  - Preparing contingency plans and legal framework
  - Setting up laboratory capacities for LSD
- Quiet winter time two (maximum of three) months



### Missions and workshops on LSD between 2012-2016

- Israel (Sept 2012) (mission as a role of an OIE LSD expert requested by Israeli Veterinary Services)
- ► FAO and EUFMD laboratory workshop in Turkey (Aug 2014)
- European Commission CVET missions
  - Cyprus (CVET missions in Dec 2014 and Jan 2015 and FAO/EUFMD lab training Jun 2015)
  - ▶ Greece (CVET missions in Nov 2015, Apr 2016 and BTSF LSD training in Nov 2015)
  - Romania (Jun 2016) not infected but at risk
  - Former Yugoslav Republic of Macedonia (Jun 2016)
  - Serbia (Jun 2016)
- Short term expert missions under BTSF initiative
  - Montenegro (Aug 2016)
  - Bosnia and Herzegovina (Sept 2016)
  - Albania (Oct 2016)
  - Kosovo (Sept 2016)
  - Moldavia (Dec 2016)

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#### Thank you for your attention!

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