



Emergence of lumpy skin disease (LSD) in Europe

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Why are we concerned?

Lumpy skin disease (LSD) is caused by the lumpy skin disease virus (i.e. *capripoxvirus*, *poxviridae*). The disease affects mainly cattle and Asian water buffaloes. LSD is transmitted by mechanical vectors (i.e. *Stomoxys* sp. Flies) and, though rare, direct transmission can occur between infected animals. The disease is usually transferred to infection-free areas by transport of animals infested with vectors.

LSD is a disease that results in substantial economic losses in terms of dairy and meat production, and it also causes damage to hides. The disease can lead to restrictions

on or a total ban of international trade of live animals and animal products (Gari *et al.*, 2001).¹

LSD is endemic in many African countries, and is rapidly spreading throughout the Middle East, including Turkey (2013) and Central Asia (Azerbaijan in 2014).

In August 2015, Greece reported two outbreaks of LSD in the Evros region along the border with Turkey. The source of the disease is likely to have originated from vectors spread from outbreaks reported in Turkey in the Edirne region in June 2015. In September 2015, the disease was also reported in the Russian Federation in Dagestan not far from the border with Azerbaijan. Outbreaks of LSD in free regions require immediate notification under the Terrestrial Animal Health Code of the World Organisation for Animal Health (OIE). Figure 1 shows the distribution of LSD outbreaks between 2006 and 2015.

Poorly regulated movements of high numbers of animals, often associated with festivities, represent a risk for the introduction of the disease. Additionally, collapse of veterinary services in conflict zones together with uncontrolled animal movement have been major factors in the disease spread in the Middle East. Currently, there is an increased risk for LSD incursion into other countries in Central Asia and Europe given the endemicity reported by some countries in these regions. This incursion accompanies the spread of other significant transboundary animal diseases (e.g. African swine fever, foot-and-mouth disease, sheep pox and goat pox) in the regions.

¹ A recent study in Ethiopia found that the financial cost related to infected herds was estimated to be between US\$5–8 per head of local zebu and between US\$42–73 per head of Holstein Friesian crossbred cattle.

How can LSD be diagnosed?

A basic diagnosis can be made when there is the presence of typical lesions on the skin and in the mouth of infected animals. However, there are other diseases that present in similar forms in cattle, which would require different methods of control and treatment from those for LSD. A definitive diagnosis can only be confirmed by submitting appropriate samples of skin lesions to a laboratory where the virus can be identified. Molecular diagnostic tests such as conventional and real-time polymerase chain reaction (PCR) assays are rapid and highly sensitive tests, and are widely used in veterinary diagnostic laboratories.

How is the disease transmitted?

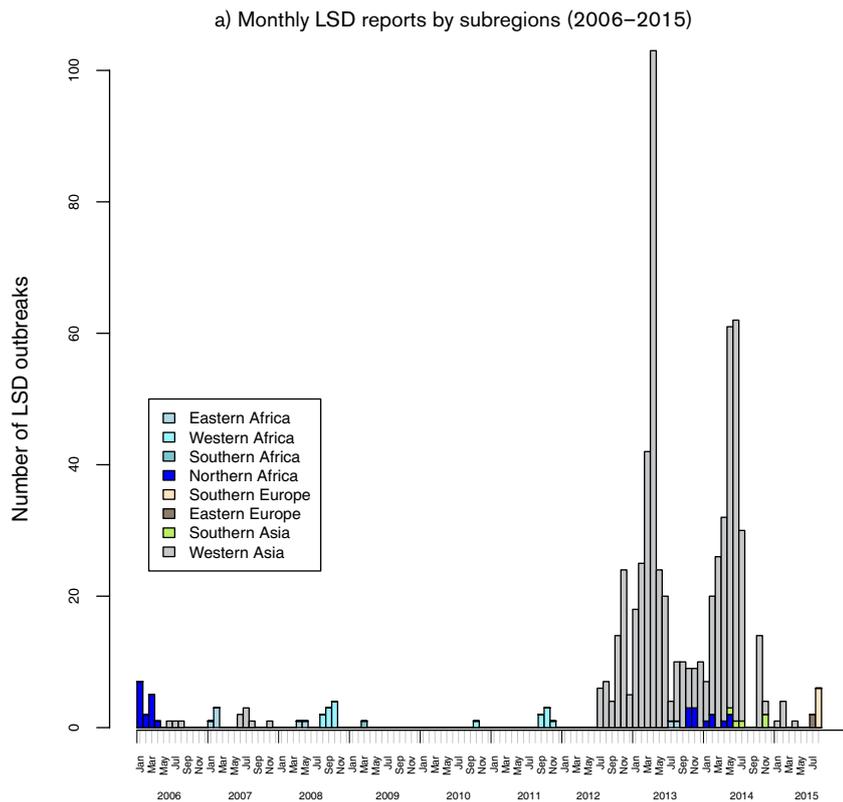
The main pathways for transmission are biting and blood-feeding arthropods, including biting flies and mosquitoes (Ali *et al.*, 2012). Though rare, transmission also occurs through direct contact, and can also spread from contaminated feed and water. Disease incidence is highest in wet/warm weather. Incidence decreases during the dry season, which is possibly linked to decreases in insect vector populations.

How could the disease be introduced into other countries in the region?

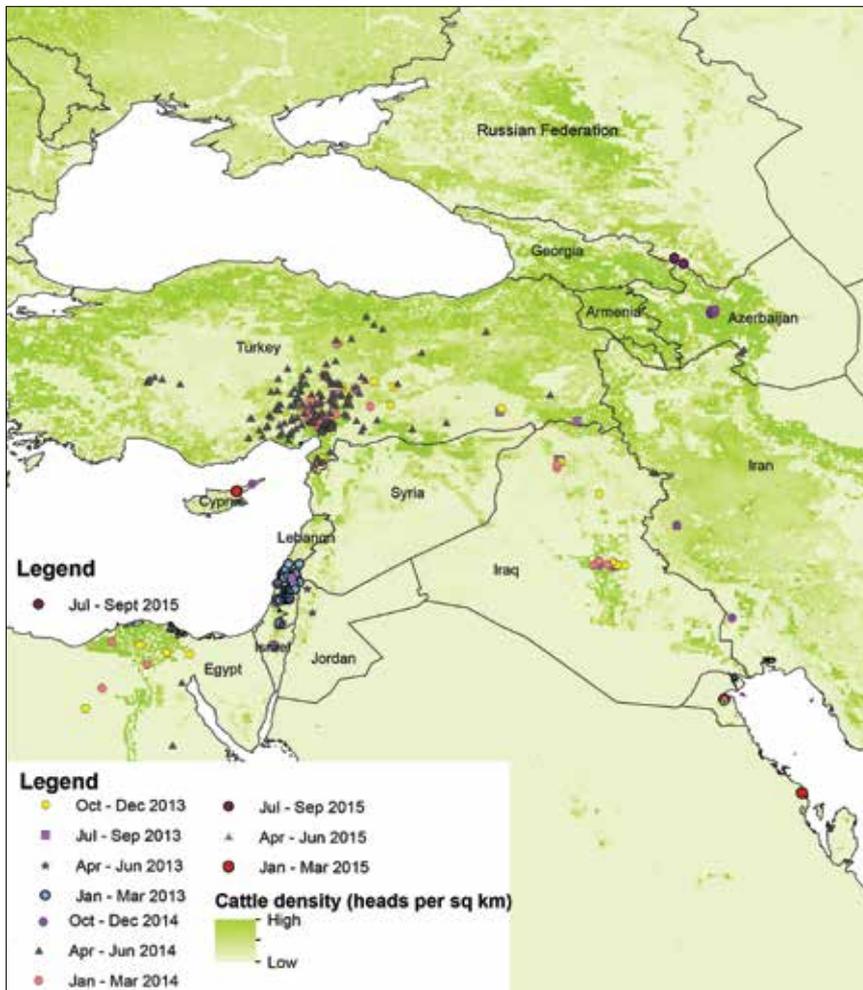
Potential options are:

- wind-borne introduction of the virus by vectors carrying the virus from endemic regions (Aziz-Boaron *et al.*, 2012);

Figure 1. LSD by region reported between 2006 and 2015



b) Distribution of LSD outbreaks reported between 2013 and 2015



Source: OIE and FAO EMPRES-i

- introduction of vectors carrying the virus via importation of straw, hay or animal products;
- introduction of infected cattle;
- movement of people, such as temporary farm workers who have had contact with infected cattle.

How can you recognize the disease?

Clinical signs of the disease may include (Abutarbush *et al.*, 2013):

- dissemination of small bumps (nodules) under or on skin surface, and on the nose, and/or mouth;
- enlarged lymph nodes;
- nodules that form a hardened crust, which carry the virus;
- secondary bacterial infections leading to yellowish-grey lesions (i.e. damage to the skin);
- swollen and tender udders or testicles;
- discharge from the eye and nose;
- bulls that become sterile and cows that abort.

How is LSD prevented and controlled?

LSD can be prevented by practising biosecurity measures at the farm level and imposing restrictions in the movement of susceptible animals and commodities from infected areas. Fly control may be helpful, but in endemic areas control is mainly through vaccination.

Policies to control LSD in case of incursion include stamping out and a combination of the following strategies (Animal Health Australia, 2009):

- **sanitary disposal** of destroyed animals and contaminated animal products to remove the source of infection;
- **quarantine and movement controls** of animals, products and other potentially infected items to prevent spread of infection;
- **decontamination** of fomites (facilities, equipment and other items) to minimize the spread of the virus from infected animals and premises;
- **control of insect vectors** in the initial stages of an outbreak;
- **tracing and surveillance** to determine the source and extent of infection and to provide proof of freedom from the disease;
- **zoning and/or compartmentalization** to define infected and disease-free premises and areas;
- **awareness campaigns** to facilitate cooperation from the industry and the community; and

- **ring vaccination** as part of a modified stamping-out policy.

Live, attenuated vaccines are commonly used against LSD. Vaccines presently used in the endemic areas include: (1) homologous live attenuated vaccines containing Neethling strain, including Lumpy Skin Disease Vaccine for Cattle® (Onderstepoort Biological Product, South Africa) and Lumpyvax®, (Intervet, Namibia); (2) new live vaccine, HerbivacLS® (Deltamune/Ceva Santé Animale, South Africa); (3) sheep pox vaccines produced in the region, including sheep pox vaccine RM 65, Kenyavac® (Jordan Bio industries Centre, JOVAC) and the Tissue Culture Sheep Pox Vaccine, Kenyavac S/GP 0240 (VSVRI, Egypt).

Conclusions

The occurrence of LSD in Greece and the Russian Federation highlights the potential for further spread to other countries in Central Asia and Europe.

An urgent risk assessment for at-risk regions is required to help decision-makers understand the situation and plan response actions.

The assessment should focus primarily on the pathways for LSD introduction (i.e. movements of cattle, regulations, authority and weather conditions that could favour the survival of the vectors).

Specific risk-management options exist for at-risk countries, including sanitary

prophylaxis and medical prophylaxis, as well as the urgent need for regional coordination of prevention and control of the disease.

Countries in at-risk regions should develop and establish a regional response plan to facilitate coordination, information exchange and experience.

FAO stands ready to provide assistance to member countries to help reduce the risk of disease spread and safeguard vulnerable, livestock-related livelihoods. Assistance should be focused on, but not be limited to:

- laboratory capacity development;
- risk communication and risk management;
- veterinary inspection and awareness campaigns for farmers and other stakeholders, in particular, for transhumant livestock;
- clinical surveillance to detect animals showing LSD signs combined with sero-surveillance in at-risk areas;
- rapid detection and prompt culling of infected herds in free areas infected with LSD as effective measures to limit the spread and impact of the outbreaks, including compensation policies;
- vaccination as an option to limit the extent and the impact of LSD outbreaks.

FAO has the technical capacity, mandate and global network necessary to facilitate information exchange and promote collaboration.

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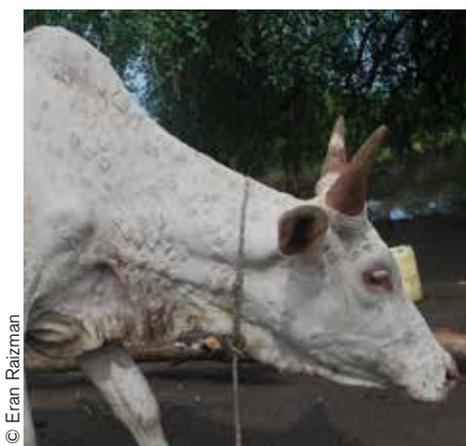
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Recommended citation

FAO. 2015. Emergence of lumpy skin disease (LSD) in Europe. *EMPRES WATCH*, Vol. 33, September 2015. Rome.

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