

## Eradication: Final report for Lumpy Skin Disease 2018

For each approved annual or multi-annual programme Member States shall submit to the Commission by the 30 April each year an annual detailed technical and financial report covering the previous year. That report shall include the results achieved and a detailed account of eligible costs incurred (Art 14 of Regulation (EU) No 652/2014).

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**Country code:** HR

### Reporting period

**From:** 2018

**To:** 2018

**Year of implementation:** 2018

## 1. Technical implementation of the programme

### **1.1 Description and evaluation of the evolution of the epidemiological situation, the technical implementation of the activities foreseen under the programme and the cost-effectiveness of the programme.**

#### Background

Lumpy skin disease (LSD) epidemic involving countries in southern and eastern part of Europe started in April 2016th with notification of outbreaks in Bulgaria. In following months, many outbreaks were detected in Bulgaria, Greece, Serbia, Kosovo, Montenegro, Albania and FYR Macedonia. Outbreaks were detected close to the Croatian border, especially in the southern part of the country. Disease was spreading very rapidly, with significant negative socio-economic impacts in all affected countries. Vaccination policy in affected countries as a response to outbreaks, in line with the Directive 92/119, was not being efficient enough. From April to July 2016, intensive discussions and negotiations were carried out with stakeholders, European Commission, neighbouring countries and EU member states on the possible outcomes of the LSD epidemic in relation to revision of the eradication and control measures foreseen by Directive 92/119. After the discussion, in the beginning of August 2016th the decision was made, supported by Croatian government, stakeholders, EC and also EFSA Urgent scientific advice (EFSA Journal 2016;14(8):4573) on the beginning of preventive vaccination against LSD, as a preventive approach in order to protect bovine population in Croatia from LSD infection. Vaccination campaign began in August 2016th in the high risk counties in the most eastern part of the country, where majority of big intensive farms are located, and in the southern part of the country where the LSD outbreaks were very close to the Croatian border. On

November 15th 2016th more than 95 % of bovine herds and bovine animals were vaccinated against LSD. Vaccination continued till the end of the year in order to vaccinate young animals and animals introduced from other MS (EU trade). There were no outbreaks of LSD in Croatia up to now, nor prove of LSD virus circulation on the Croatian territory.

During the 2016-2017 periods a passive surveillance on LSD was implemented in the entire territory. Farmers and veterinarians were informed on importance of notification of every sign of the disease before and after the vaccination as well as any side effects. Veterinarians had an obligation to perform clinical examination and to take sample(s) in each case of skin lesions and send it to the laboratory in order to exclude presence of field strain LSD virus. In addition to that, to investigate side effects resulting with death or abortions of vaccinated animals, carcasses of dead animals were examined by Croatian Veterinary Institute pathologists.

In the framework of passive surveillance seven suspicions on LSD were notified during the vaccination campaigns. Animals were tested and LSD infection was ruled out. All laboratory results were negative, except for one suspicion resulting with positive result on vaccine strain of the LSD virus.

In 2016-2017 CVI conducted a study to examine the possibility of viral shedding in milk after vaccination. Also, the study examined the viremia and viral shedding from skin nodules and nasal swabs using virus isolation and real-time PCR to contribute to the understanding of LSD vaccine safety.

(Ref. "Detection of lumpy skin disease virus in skin lesions, blood, nasal swabs and milk following preventive vaccination", Bedekovic et al. *Transbound Emerg Dis.* 2018 Apr; 65(2):491-496. doi: 10.1111/tbed.12730. Epub 2017 Oct 30, link: <https://www.ncbi.nlm.nih.gov/pubmed/29086485>).

During sampling for above mentioned study, serological testing of blood samples were performed using VNT and furthermore testing of cell immunity was done.

In 2017 the LSD active surveillance programme continued.

Unvaccinated bulls within two AI approved centres, one in Varazdin county and one in Osijek Baranja county were tested as sentinel animals every 28 days using PCR and VNT methods. Additionally, bulls and their semen were tested according to the Impl. Dec. 2016/2008, for the trade purposes.

All surveillance results of testing samples taken from sentinel animals and in the framework of the above mentioned study, were negative on LSD virus.

Due to the favourable epidemiological situation and the fact that vaccination within the affected region has successfully contained the disease, having in mind that Croatia has conducted two vaccination campaigns in 2016 and 2017, it was decided to cease vaccination from the beginning of 2018.

#### Implementation of the LSD surveillance programme in 2018

LSD surveillance programme was implemented in 2018 for the purpose to regain status of LSD free country in line with point 2., Article 11.9.4., Chapter 11.9. of the Terrestrial Animal Health Code.

Passive surveillance was implemented on the whole territory of Croatia. Every suspicion on LSD had to be notified to the veterinarian and samples had to be taken in order to rule out the LSD infection.

Active surveillance on LSD was implemented within four programme components in order to check the immunity of vaccinated bovine population and for the purpose of early detection of possible incursion of the LSD virus.

Sampling and clinical examination has started in July 2018 as follows:

##### 1. LSD surveillance in high risk and risk areas

High risk and risk areas were determined in accordance with epidemiological situation in the region especially in bordering countries and bovine population size.

Due to epidemiological situation and according to the size (depth) of area for possible spreading of LSD from region where LSD virus circulates, entire Dubrovnik – neretva county is considered as the high risk area. Within this area randomly selected 150 bovine animals was planned to be sampled irrespective of their immune status. Number of bovines was calculated on 2% prevalence (with 95% probability).

In addition to laboratory testing of bovine animals, all bovine animals originating from Dubrovnik-neretva county intended for movement were subject to the clinical examination 24 hours before movement.

Other risk areas were included in surveillance as follows:

Šibenik-knin – 70 animals

Split-Dalmatia county – 70 animals

Vukovar-srijem – 70 animals

Osijek-baranja county – 70 animals

Karlovac – 70 animals

Sisak-moslavina – 70 animals

Lika-senj county

Bovine animals were randomly selected.

In total randomly selected 640 bovine animals were included in surveillance within all risk areas.

Samples were taken for serological and virological testing from all animals.

Monthly sampling was foreseen for all randomly selected bovine animals within this programme component.

## 2. Immunity monitoring in vaccinated bovine population

540 bovine animals were randomly selected according to their vaccination status and tested on LSD using ELISA test.

Bovine animals were randomly selected according to their vaccination status as follows:

110 bovine animals vaccinated twice and last time within 6 months before testing

110 bovine animals vaccinated once

110 non vaccinated bovine animals younger than 6 months

210 non vaccinated bovine animals older than 6 months.

Non-vaccinated animals must originate from domestic bovine population and be born to dams vaccinated at least once.

Within this component repeating of testing is foreseen only in case of seropositive test result on previously tested bovine animals. In case that samples were seropositive testing was repeated after 3 months.

In case that some of randomly selected bovine animals originated from risk areas, testing was repeated monthly in line with point 1.

## 3. Clinical surveillance

In addition to the serological and virological testing, clinical examination of bovine animals was performed within all herds selected for testing (number of clinically examined bovine animals is determined according to 95% probability to detect a prevalence as low as 10% if LSD is present in the herd). Since testing was repeated monthly or in 3-month period, clinical examination was performed each time when testing occurred. All clinical examinations were conducted in the framework of the surveillance programme. Clinical examination was performed in two herds before movement in Dubrovnik-neretva county which is not included in the reimbursement claim.

The number of bovines clinically examined is higher than initially planned since it was hard to estimate the number of bovines according to 10% design prevalence rate (up to 29 bovines in the herd). According to programme components testing was repeated in all herds with seropositive bovines two times after first testing which resulted in higher number of clinically examined bovines than expected.

## 4. Surveillance of non vaccinated bulls

All bulls from semen collection centers are tested in accordance with CID 2016/2008.

Semen collection centers are situated in three counties: Krizevci-Koprivnica (5 bulls), Osijek-Baranja (18 bulls) and Varazdin (12 bulls) county.

Bulls in production were serologically tested each 28 days, virologically tested (PCR) each 14 days and each collected semen was subjected to a virological tests.

During sampling for serological testing a clinical examination of bulls was performed.

## Results

### Programme execution

In 2018 46545 bovine animals were clinically examined. 5574 samples were taken from bovine animals on the same holdings and tested on LSD.

Number of clinical examinations is higher than planned due to the size of each examined herd and number of animals to be examined according to the prevalence table. The exact number was hard to predict due to the same reason during the programme submission.

### Data on laboratory testing

Testing was performed in Croatian Veterinary Institute.

QPCR test is used for the virological testing.

In case of PCR testing of unvaccinated bulls and semen, testing was performed on pooled sampled of ten animals at the most. Pooling of samples was done in the laboratory.

ELISA test is used for serological testing, while in case of false positive results on ELISA test, VN test is used for the confirmation purposes.

Before the ELISA test has been validated, VN test was used for routine serological testing on sentinel animals - unvaccinated bulls. 164 VN tests have been performed on blood samples taken from unvaccinated bulls. All samples were negative. For the purpose of immunity check and control of vaccination, tests on cell immunity were done on 67 samples out of which 26 samples were positive.

All tests have been validated in line with laboratory procedure.

## 1.2 Details on the level of achievement of the targets set in the approved programme and technical difficulties.

67 blood samples were rejected by the laboratory due to lower quality of samples.

LSD was excluded in 3 suspect bovine animals – QPCR tests were negative, while serological testing revealed positive results which were considered as consistent to immune status and vaccination data.

In addition to the programme components, 477 dead bovine animals were examined in the framework of pathological examination of dead animals (disease monitoring in dead animals), and there were no pathological signs of LSD observed.

4909 ELISA test and 4378 PCR tests were performed in the framework of active surveillance of LSD.

### Main conclusions

All samples tested virologically (QPCR) were negative on LSDV, while serological testing of vaccinated bovines proved immunisation of the bovine population.

However, due to some factors such as low test sensitivity, sampling performed more than 6 months after last vaccination, cell immunity, etc., number of seropositive animals was relatively low, under 30%.

No clinical signs on LSD infection were noticed during clinical examinations.

## 1.3 Epidemiological maps for infection and other relevant data on the disease/activities (information on serotypes involved,...) (Please attach files of data using the PDF attachment feature) Use the textbox below to provide clarifications for the maps you attach, if needed.

No LSD infection was detected in 2018.

## 2. TECHNICAL IMPLEMENTATION ON RUMINANT DISEASES PROGRAMMES

VERY IMPORTANT: Please fill out the following tables with figures corresponding to measures performed during the implementing period (1/1 to 31/12).

**Table A - DATA ON HERDS**

Region	Animal species	Total number of herds	Total number of herds under the programme	Number of herds to be checked under the programme this year	Number of herds checked	Number of positive herds	Number of new positive herds	Number of herds depopulated
		% of herds depopulated	% of herds coverage		% of positive herds Period herd prevalence		% of positive herds Herd incidence	
Croatia	Cattle	23,220	23,220	914	866	0	0	0
		%	94.75 %		0 %		0 %	
<b>Total</b>		23,220	23,220	914	866	0	0	0
		%	94.75 %		0 %		0 %	

**Table B - DATA ON ANIMALS**

Region	Animal species	Total number of animals	Number of animals under the programme	Number of animals to be tested under the programme this year	Number of animals tested	Number of animals tested individually	Number of positive animals	Number of animals with positive result slaughtered or culled	Number of animals slaughtered
		% coverage at animals level				% positive animals Animal Prevalence			
Croatia	Cattle	412,876	412,876	1,180	1,932	1,932	0	0	0
		163.73 %				0 %			
<b>Total</b>		412,876	412,876	1,180	1,932	1,932	0	0	0
		163.73 %				0 %			

**Table C - DATA ON VACCINATION PROGRAMMES**

Region	Animal species	Total number of herds	Total number of animals	Number of herds in vaccination	Number of herds vaccinated	Number of animals vaccinated	Number of doses of vaccine	Number of adults vaccinated	Number of young animals vaccinated	Number of animals with primary
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				programme this year			admini- stered			vaccination (initial+ booster)
Total		0	0	0	0	0	0	0	0	0

**Table D - DATA ON STATUS OF HERDS AT THE END OF THE PERIOD**

	Region	Animal species	Total number of herds and animals under the programme	Unknown	Not free or not officially free from disease		Free of officially free-disease status suspended/ withdrawn	Free from disease	Officially free from disease
					Last check positive	Last check negative			
Total - herds			0	0	0	0	0	0	0
Total - animals			0	0	0	0	0	0	0

**Table E - SUSPENSION/WITHDRAWAL OF THE FREE OR OFFICIALLY FREE STATUS**

Region	Animal species	Status	Reason	Number of herds
Total				0

**Table F - STRATIFIED DATA ON SURVEILLANCE AND LABORATORY TESTS**

Region	Animal species	Test type	Number of samples	Number of tests	Number of positive tests
Croatia	Cattle	ELISA test	4,909	4,909	1,367
Croatia	Cattle	PCR test	4,378	4,378	0
<b>Total</b>			9,287	9,287	1,367
		<b>Methods of laboratory analysis</b>		<b>Total number of tests</b>	
		<b>Total - ELISA test</b>		4,909	
		<b>Total - PCR test</b>		4,378	

## COMMENT / ADDITIONAL CLARIFICATION

Under the Part 2. no positive herds and animals are inserted. Seropositive animals were considered as immune, not infected.

Due to some unpredictable circumstances, which could not be neither resolved or influenced by Veterinary and Food safety Directorate, invoice from Croatian veterinary institute for December 2018 is not paid. For that reason, all the laboratory tests from December 2018th cannot be claimed and are deleted from the Final Financial Report.