



Preparation for African swine fever (ASF) in Croatia – steps taken

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The impact of ASF...



1. Direct losses:

- High lethality, abortions, no weight gain....
- From the total export of meat in Europe, 58% is covered by swine meat with a benefit of 7.7 billion € /year (*8.5% from the total agricultural production*).
- From 2014. ASF virus has infected over 500 000 swine in Europe, and a significant larger amount of swine was preventively culled.

2. Indirect losses:

- Eradication measures.
- These costs in the EU extend over 60 mil € from 2014-2018.

3. Social impact:

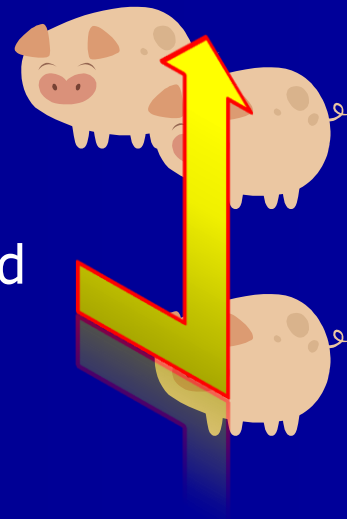
- Farm closing, loss of jobs, the raise of meat prices...

4. Political impact?



Swine production in Croatia

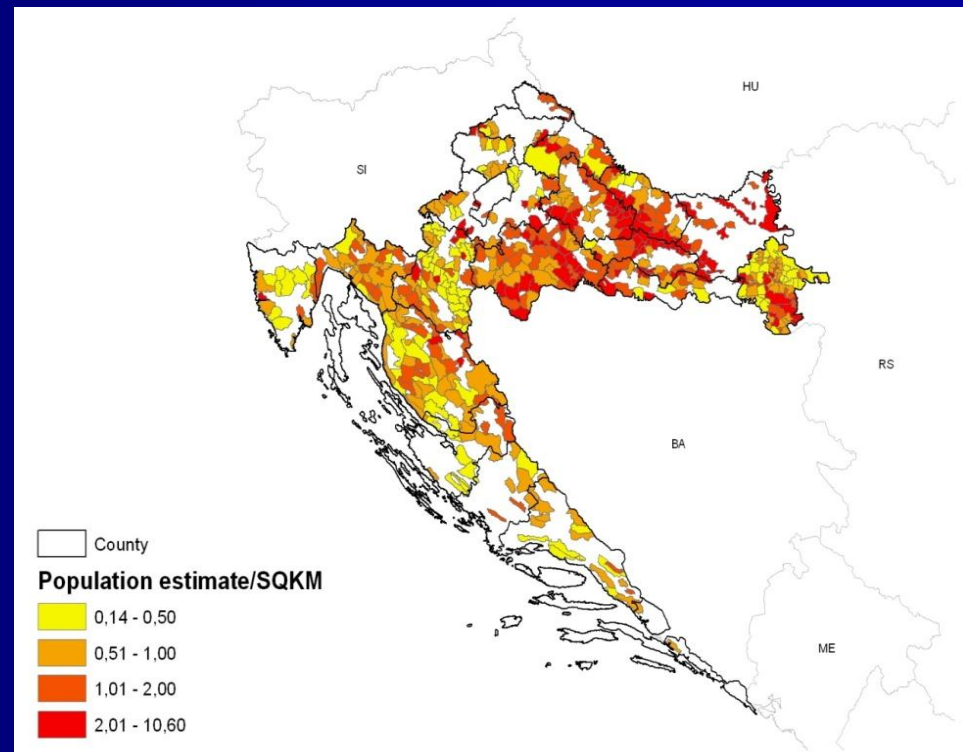
- ❑ In Croatia animal breeding contributes within 35% of the agricultural production, and swine production contributes with 35% of animal breeding.
- ❑ In 2018. an increase in the number of swine is recorded (primarily due to rehabilitation of autochthonous breeds)- 1.160.000 swine, 134.000 sows (*Osijek Baranja, Vukovar Srijem, Zagreb and Varaždin County - 90%*).



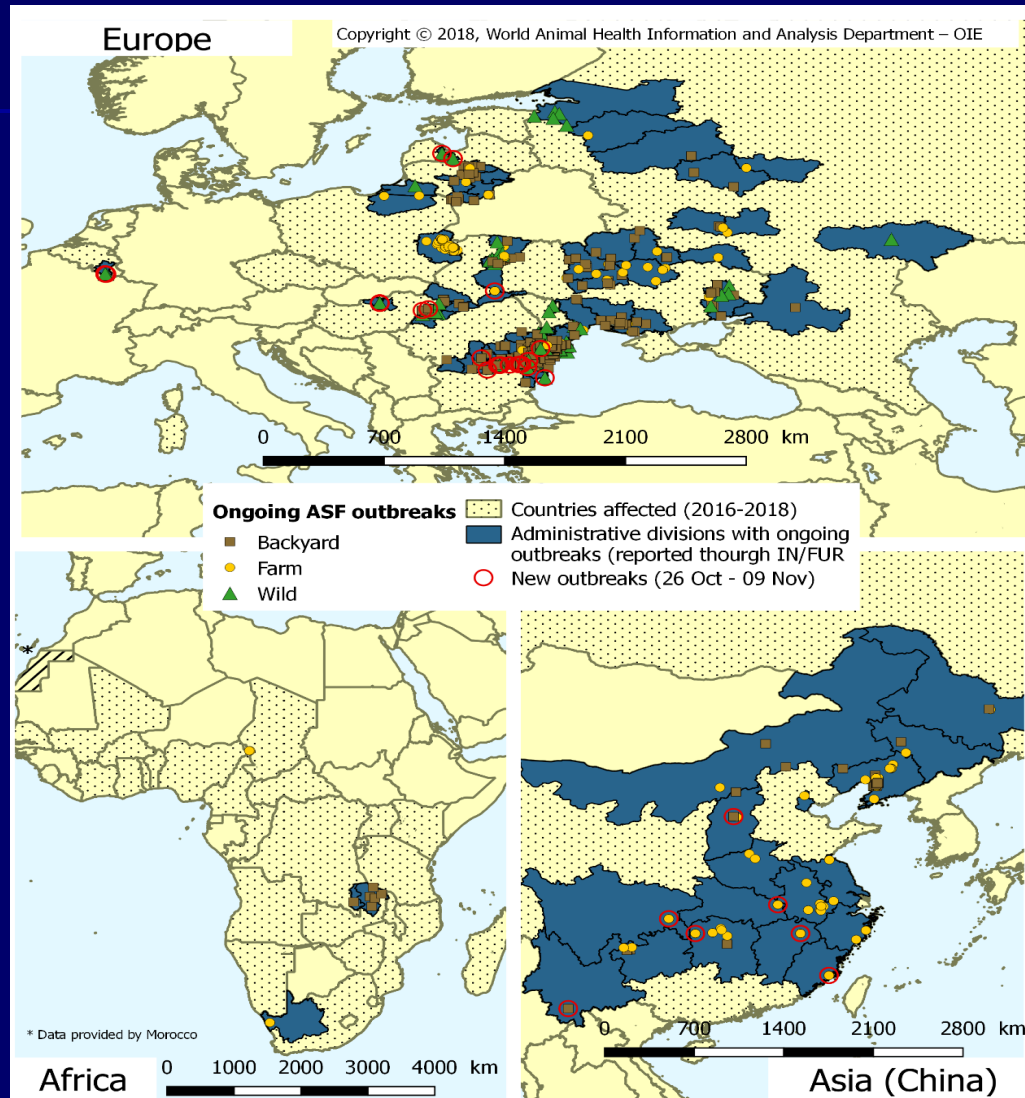
Wild boar population in Croatia

Over **40.000 wild boars** are registered in 2018 in the Central hunting registry (on the basis of data contained by hunting Ground management).

1065 hunting grounds (319 public, 746 private and state).

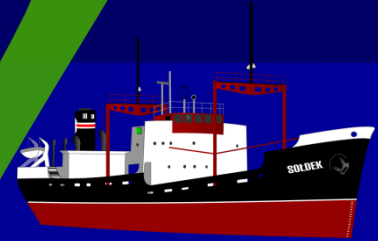


The spread of ASF in 2018-2019.



Main courses of ASF viral spread

- Transport of contaminated food – swill feeding;
- Human factor;
- Contact with wild boars (reservoirs);
- Vectors?

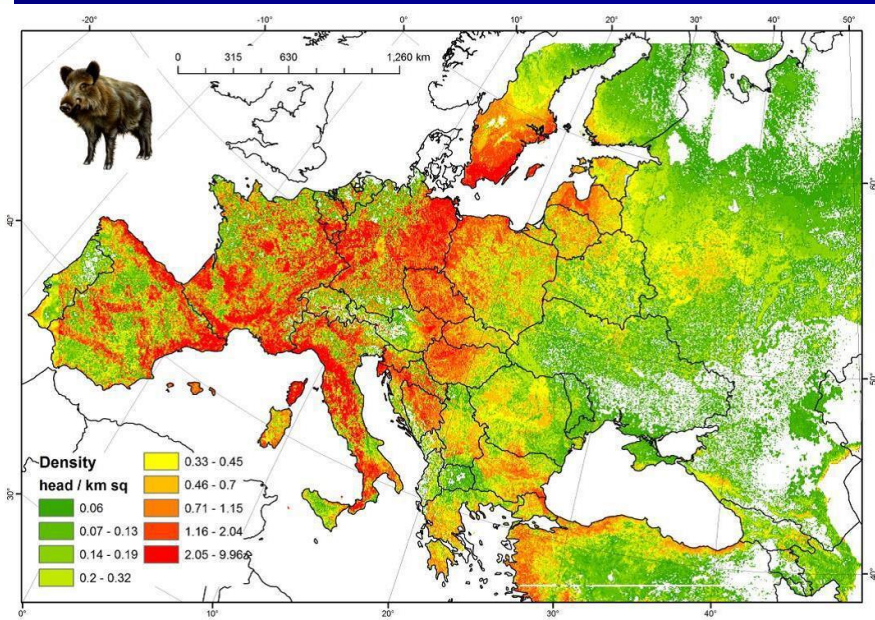
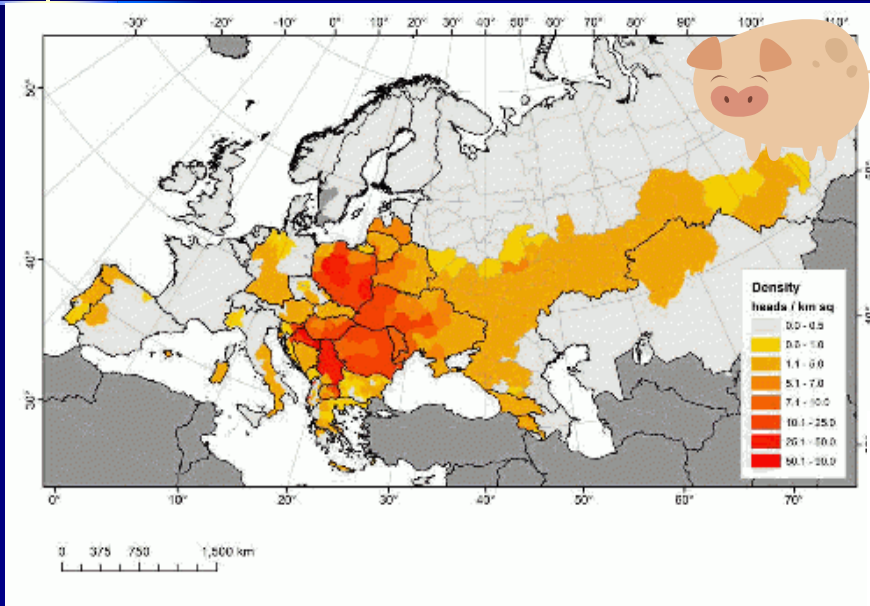


Epizootiological features and risk factors of ASF occurrence and spread

- Silvatic cycle:
- Domestic swine cycle:
- Mixed cycle:
- **European cycle** (Chenais et al., 2019).



Population density of domestic swine in extensive holdings and wild boars in Europe (FAO/ASFORCE, May 2015)



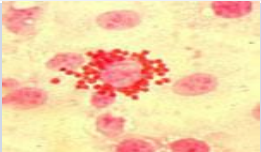
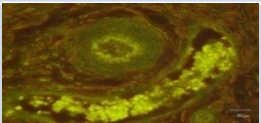
ASF diagnostics

Clinical signs +
high mortality

Detection of
anti-viral ASF
antibodies

Detection of
ASF virus

Detection of ASF virus

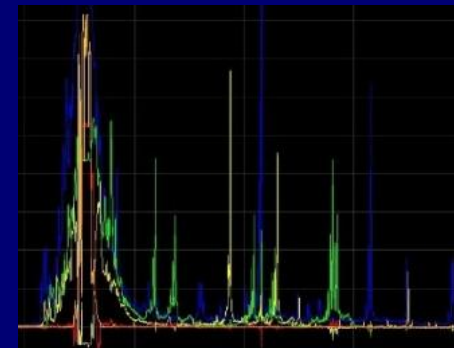
TEST	Method	When do we use it?	Reference
Convencional PCR	konvencionalni PCR (OIE)	Monitoring Individual testing	Agüero i sur. 2003.
RT-PCR	UPL RT-PCR (EURL)	Monitoring Individual testing	Fernandez-Pinero et al. 2013.
	Taqman Probe (OIE)	Monitoring Individual testing	King et al. 2003.
Antigen ELISA	ELISA Ingezim - K2, Double Ab Sandwich	Monitoring	INGENASA
Hemadsorption test		Confirmatory test, biosecurity level 3 i 4.	Malmquist and Hay, 1960
Immunofluorescent test		Confirmatory test, biosecurity level 3 i 4.	Bool et al., 1969
Genotyping (genotip I. i II.)	Convencional PCR + sequencing	Confirmatory test, Sequencing – B602L ili CVR	Gallardo et al. 2011.

Sequencing

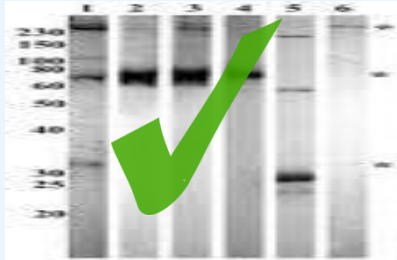
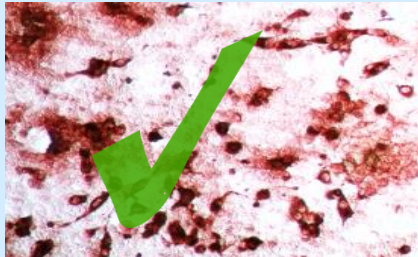
EURL – Genotypes and subtyping of ASF strains 2007-2019

COUNTRY	YEAR	P72 GENOTYPE	CVR SUBTYPING
Georgia	2007	II	CVR1
Armenia	2007	II	CVR1
Azerbaijan	2008	II	CVR1
Russia Federation	2007-2012	II	CVR1
	2012-2016	II	CVR1
Ukraine	2012, 2015	II	CVR1
Belarus	2013	II	CVR1
Estonia	2014	II	CVR1
	2015-2017	II	CVR1 + CVR 2
Latvia	2014-2017	II	CVR1
Lithuania	2014-2017	II	CVR1
Poland	2014-2015	II	CVR1
	2016	II	CVR1
	2017	II	CVR1
Moldova	2016	II	CVR1
Czech Republic	2017	II	CVR1

GENOTYPE: II
SUBTYPE: CVR1



Detection of ASF antibodies

TEST	Name of test	When do we use it?	Producer/reference
Antibody ELISA	INGEZIM PPA Compac R.11.PPA.K3 blocking ELISA – based on monoclonal antibody (MAb) specific to ASFV VP72 protein	Monitoring Individual testing	INGENASA
Immunoblotting (IB) test		Confirmatory test	Pator et al. 1989.
Indirect immunoperoxide test		Confirmatory test	Gallardo et al. 2013.

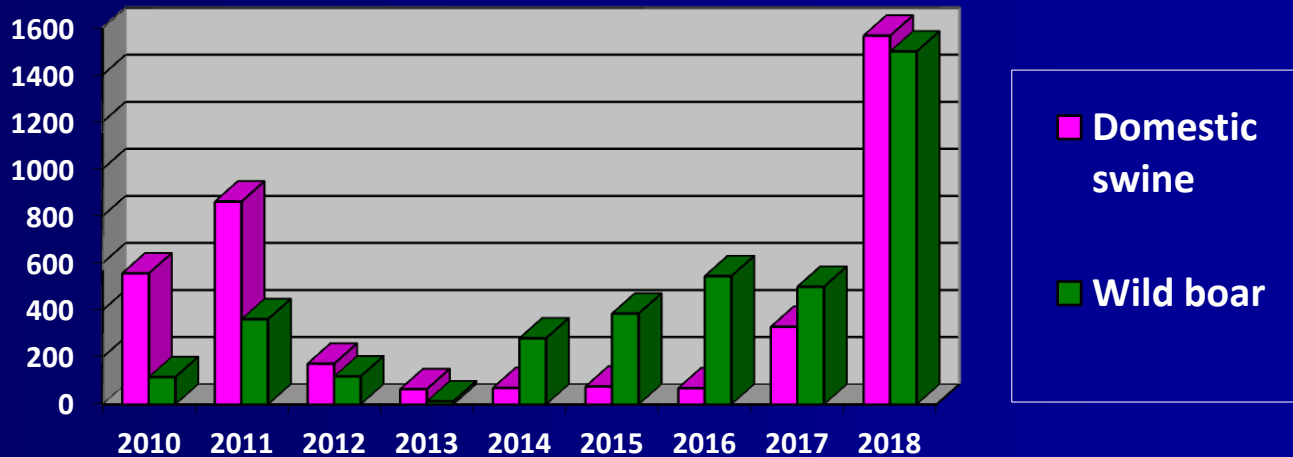
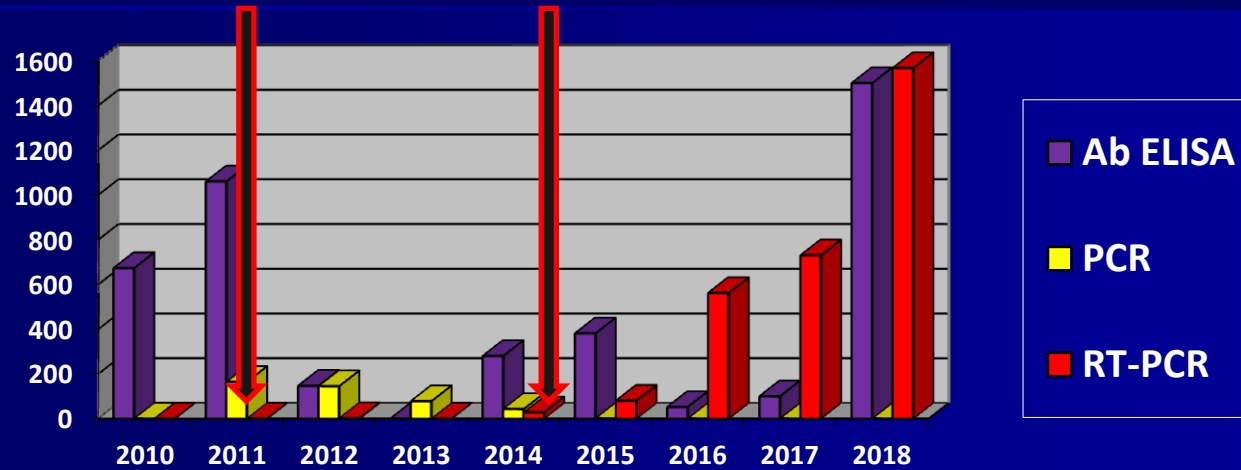
Capacity of the NRL for ASF in Croatia



Employees:



Monitoring testing 2010-2018



Measures provided in Croatia



LEGISLATION and REGULATIONS:

Veterinary legislation (Gazette 82/13 i 148/13),
Order for control measures for ASF (Gazette 112/07),
Diagnostic manual for ASF (Gazette 116/08),

ORDERS and DIRECTIVES:

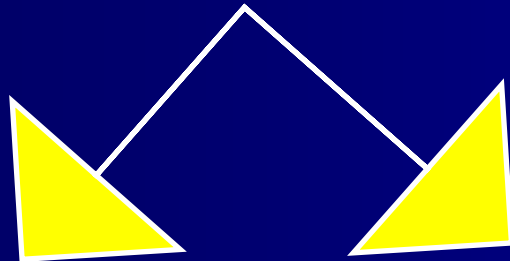
National crisis plan for ASF,
Annual order for the implementation of measures to
provide animal health against infectious and parasitic
diseases and their financing,
Order for the prevention and early recognition of ASF in
Croatia,
Order regarding the control of wild animal species density.

Prevention

Specific prevention: **no vaccine available!**

Unspecific prevention:

a) **Biosecurity measures on farms**



Constrution: objects, roads,
fences...

Production and sanitary management,
education of employees...



a) Biosecurity measures in extensive breeding

1. Swine producers must ensure **no possible (direct or indirect) contact of swine with wild boars** meaning proper double fencing, and implementing strict control measures including disinfectant barriers and similar.
2. **Inspection of all swine farms** (50 000) in Croatia considering implementation of all recommended biosecurity measures.
3. **Open pasture is banned** except when additional measures are implemented to entirely unable contact between swine and wild boars (double fencing - voltage).



c) Measures implemented in hunting grounds

1. Decreasing the number of reproductive animals (sows, gilts) for 50% in the entire country.
2. Improved hunting management, banding winter feeding, cleaning procedures prior and post hunting, repellents, disinfection barriers, fencing...).
3. Strict passive and active monitoring of wild boars according to the proposed program.



COST ASF-STOP Understanding and combating African Swine Fever in Europe



COST Action: CA15116



WG 1: ASF-virus (Jelena Prpić, HVI)

WG 2: ASF in wild boar

WG 3: ASF in domestic pigs-pig industry

WG 4: ASF infection dynamics and control (Lorena Jemeršić and Tomislav Keros)

WG 5: Integration of knowledge and communication of results, training

<http://www.asf-stop.com/>



African swine fever



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