

ASF eradication in Spain: What did we learn?

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Prof. JM. Sánchez-Vizcaíno

Complutense University of Madrid
OIE-ASF Reference Laboratory
jmvizcaino@ucm.es
www.sanidadanimal.info

ASFv out of Africa I and II



Portugal, 1957, 60, 94, 99
Spain, 1960-95
France, 1964,
Italy, 1967, 69, **78**, 93
Malta, 1978,
Belgium, 1985,
Holland, 1986

Lisboa
1957, 1960

Kenia, 1921

Cuba, 1971,
1980
Brasil, 1978
D.R. , 1978,
Haiti, 1979

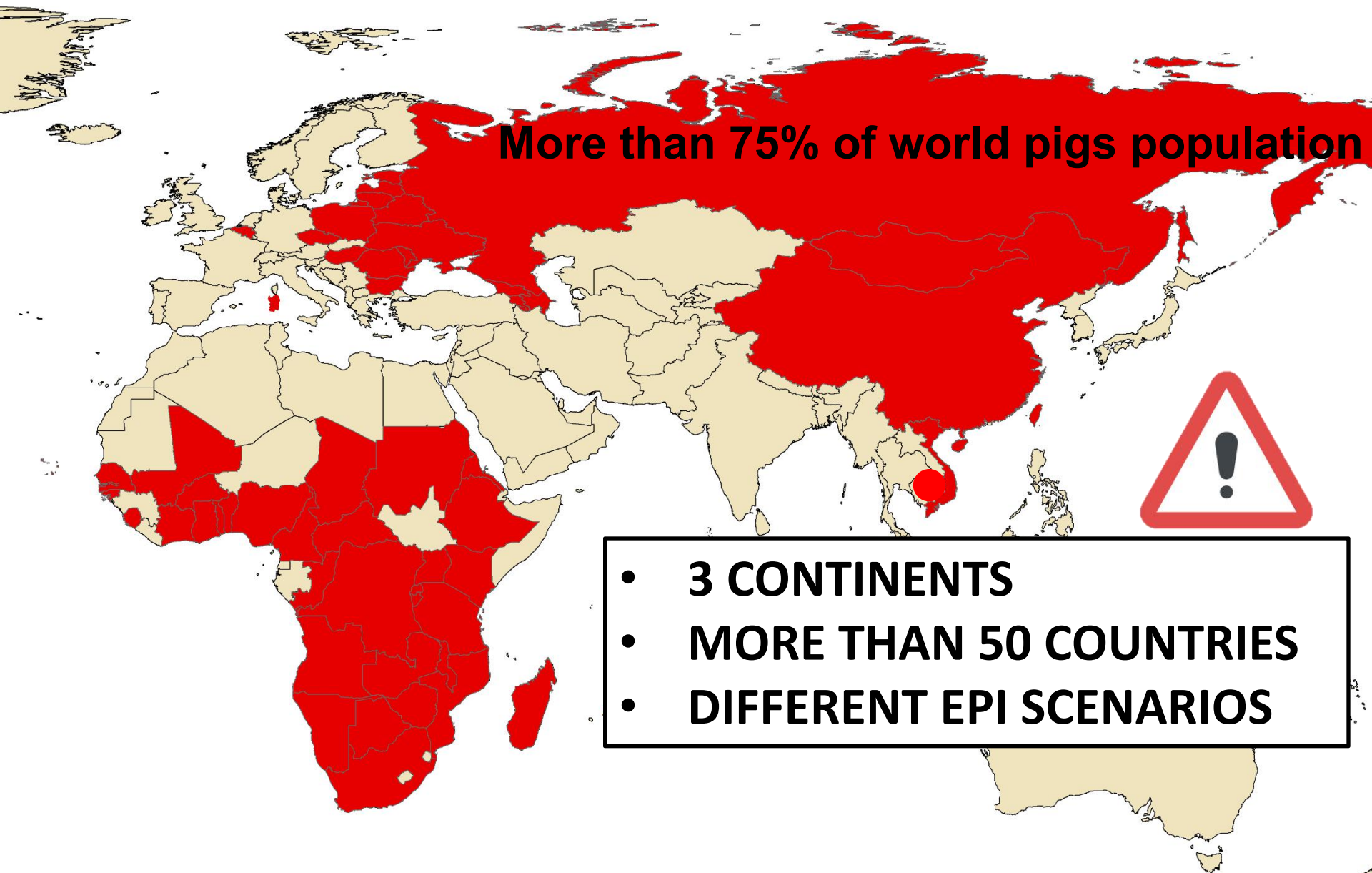
First, 1957
Second, 1960

Eradication in Spain in 1995

ASF out of Africa: III



ASF the threat of the *global* pig industry



Spain: Swine dates late 60s

All country affected of ASF

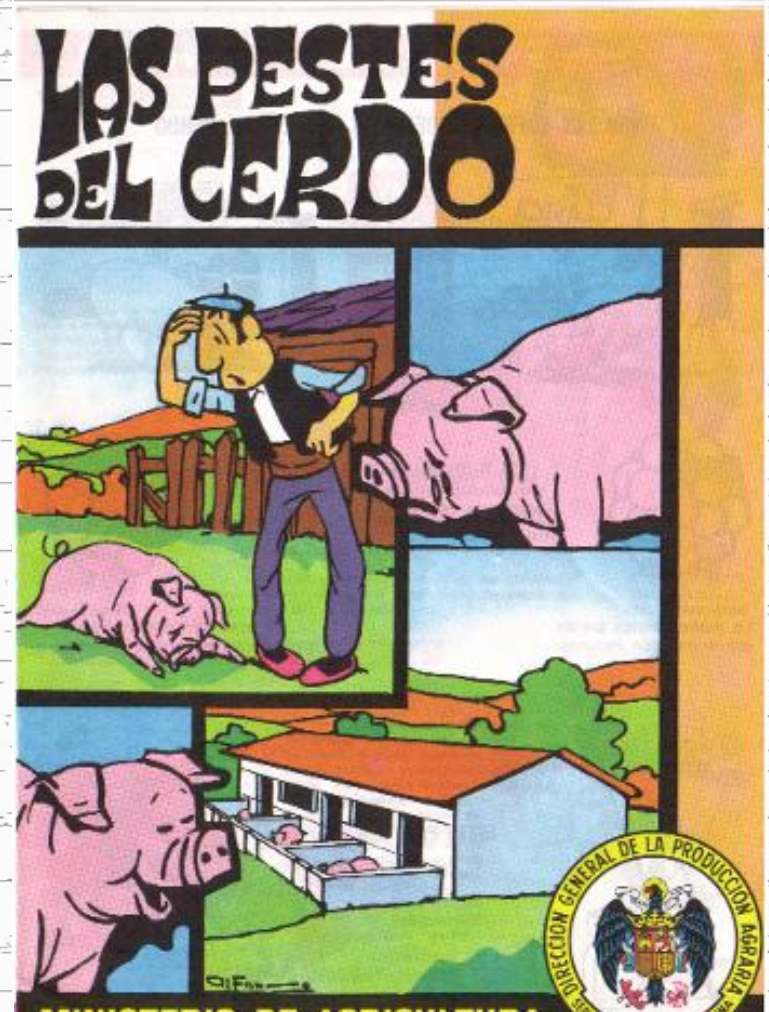
Consumption: **8 Kgrs/person/year**

Pig/Population: **6.032.000**

Swine meat production: **258.000 Tm**



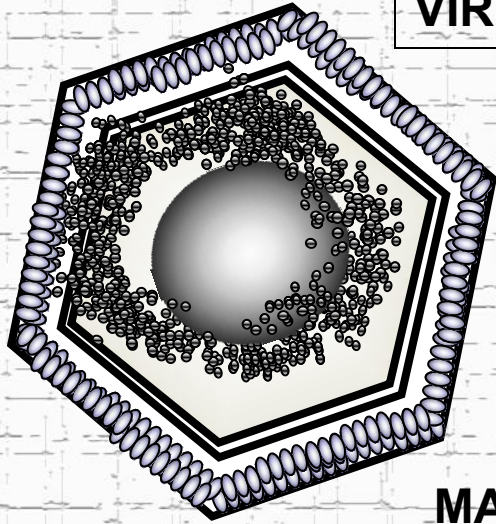
CSF & ASF



ASF 1960 - 1995

LACK OF KNOWLEDGE OF ASFV

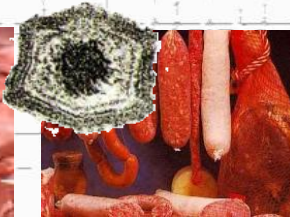
VIRUS AND DISEASE EVOLUTION



?



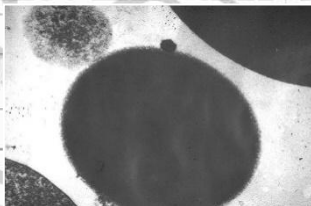
MAIN ROUTES OF TRANSMISSION ?



Biological
Vectors



Botija et al 1982



?



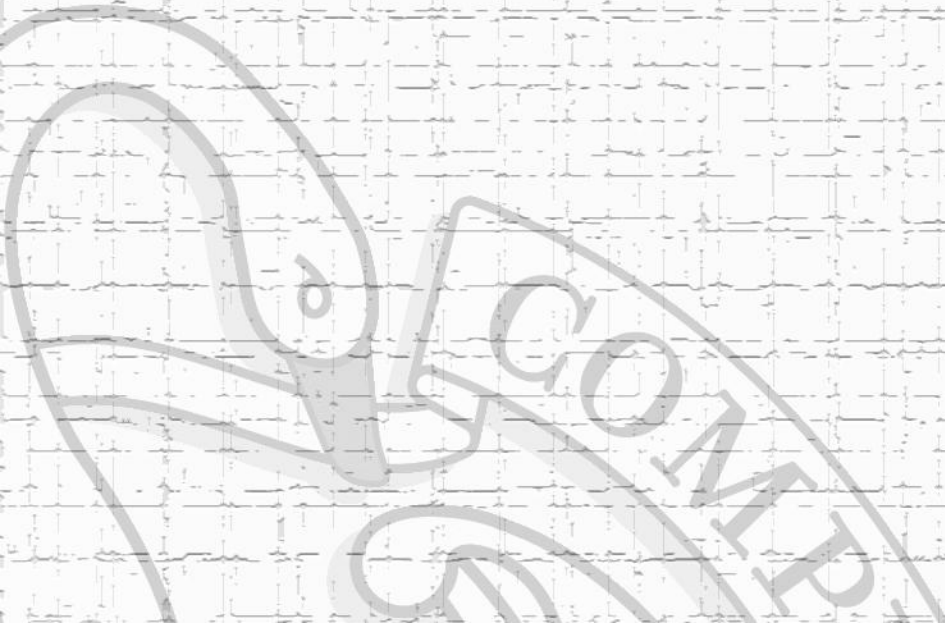


OUT DOOR

TWO PRODUCTION SYSTEMS



IN DOOR



Swine Production System LATE 80s



MAIN PROBLEMS WAS IN OUT DOOR PRODUCTION



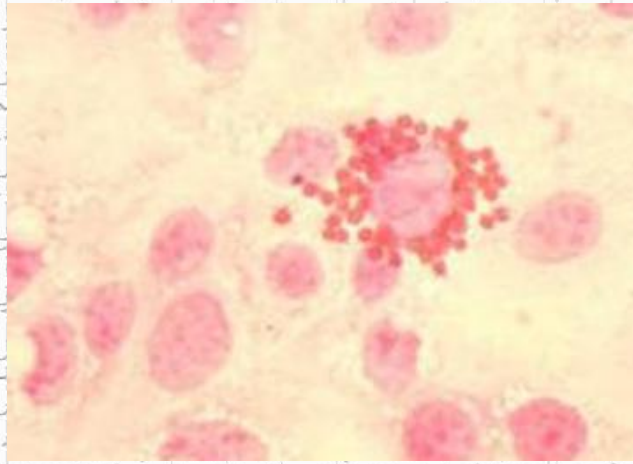
INFECTED & CARRIERS ASF DP & WB



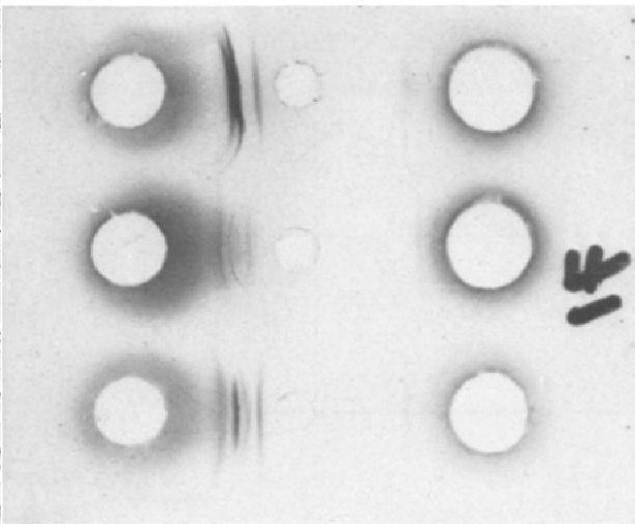
INFECTED SOFT TICKS

A ENDEMIC COUNTRY

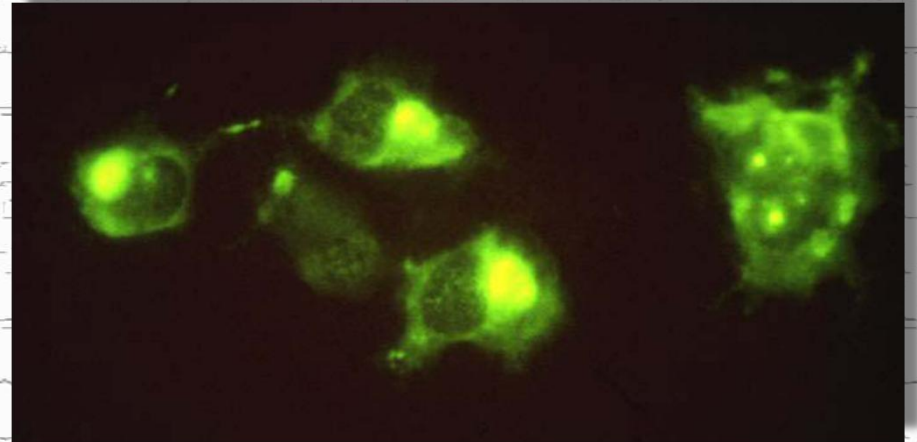
FEW DIAGNOSIS TOOLS



Malquist and Hay 1960

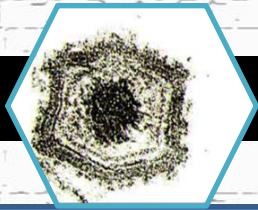


Pan et al, 1975



Bool et al, 1972

Not good for large scale use



IDENTIFICATION OF ASFV

VIRUS ISOLATION +
HAEMADSORPTION (HA)
TEST

SOME ASF ISOLATE ARE
NOT HA+
Botija 1980

Reference test to confirm ASF
presence

Malmquist and Hay, 1960

Samples (+ASFV)



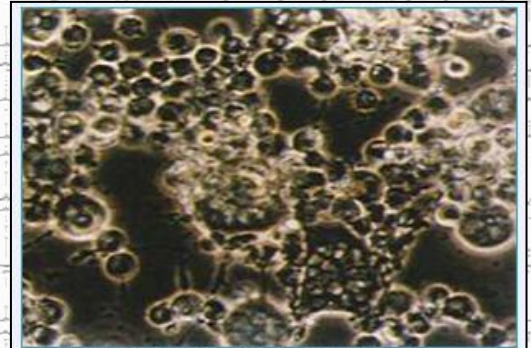
Susceptible primary
culture (monocytes
and macrophages)

Cytopathic effect (CPE) → daily observation 7-10 days
→ CPE after 48 hours HAD

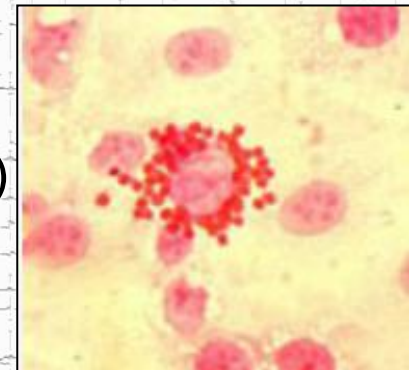
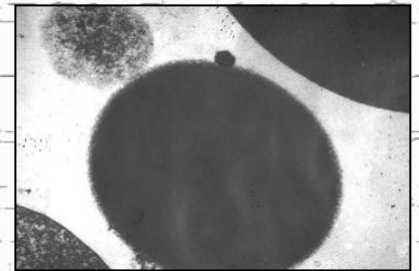
Positive HAD → always **ASF POSITIVE**

NO POSITIVE HAD → COULD BE ASF POSITIVE (PCR)

No HA: MAINLY ATTENUATED ISOLATES



Cytopathic effect of a porcine macrophage culture infected with ASFV.



The Spanish swine industry in 1986

1986

Consumption: 33 Kgrs/person/year

Pig/Population: 13.386.000

S.Meat Production: 1.167.000 Tm

1966

Consumption: 8 Kgrs/P/Y

Pig/Population: 6.032.000

S meat production: 258.000 Tm

The Spanish swine industry grew considerably, even with ASF, but it was not competitive for a global market

THE MOTIVATION TO ERADICATE. THE ENTRANCE IN THE EEC

A GOOD COORDINATED ERADICATION PROGRAM WAS ADAPTED

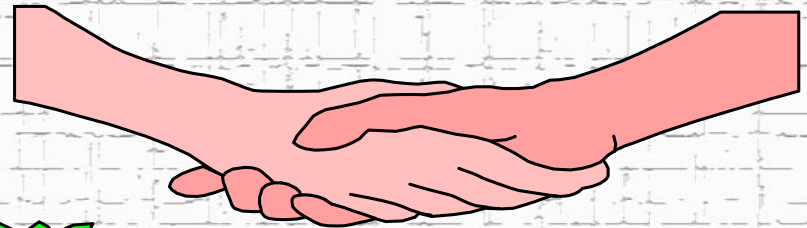


Coordinated program

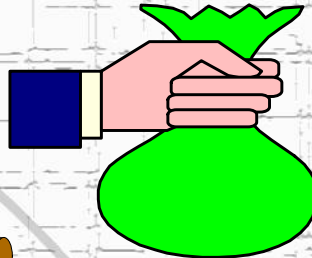
1. A consensuate program with ADMINISTRATION
S. producer and S. industry



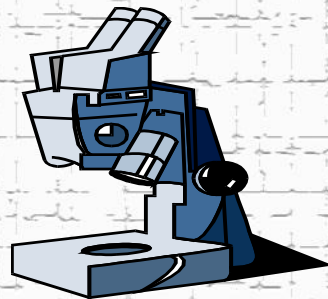
2. Great collaboration
with farmers



3. Adecuated
Medium



COMPENSATION...



VERY IMPORTANT

ASF ERADICATION EVOLUTION (1)

Spain 1985-1995



Some Key Actions

- 1) A COORDINATED ERADICATION PROGRAM**
- 2) ALL STATEHOLDER AGREE WITH THE PROGRAM**
- 3) GOOD INFORMATION OF RISKS and BIOSECURITY**
- 4) GOOD ANIMAL IDENTIFICATION. CONTROL MOVEMENTS**
- 5) GOOD SURVEILLANCE PROGRAM. NEW TOOLS**
- 6) COMPESATION TO FARMERS**
- 7) MORE RESEARCH FUNDING**
- 8) MOTIVATION. To do more competitive the S.S.I**

NEW DIAGNOSIS TOOLS FOR ASF



First adaptation of ASF ELISA for antibodies detection

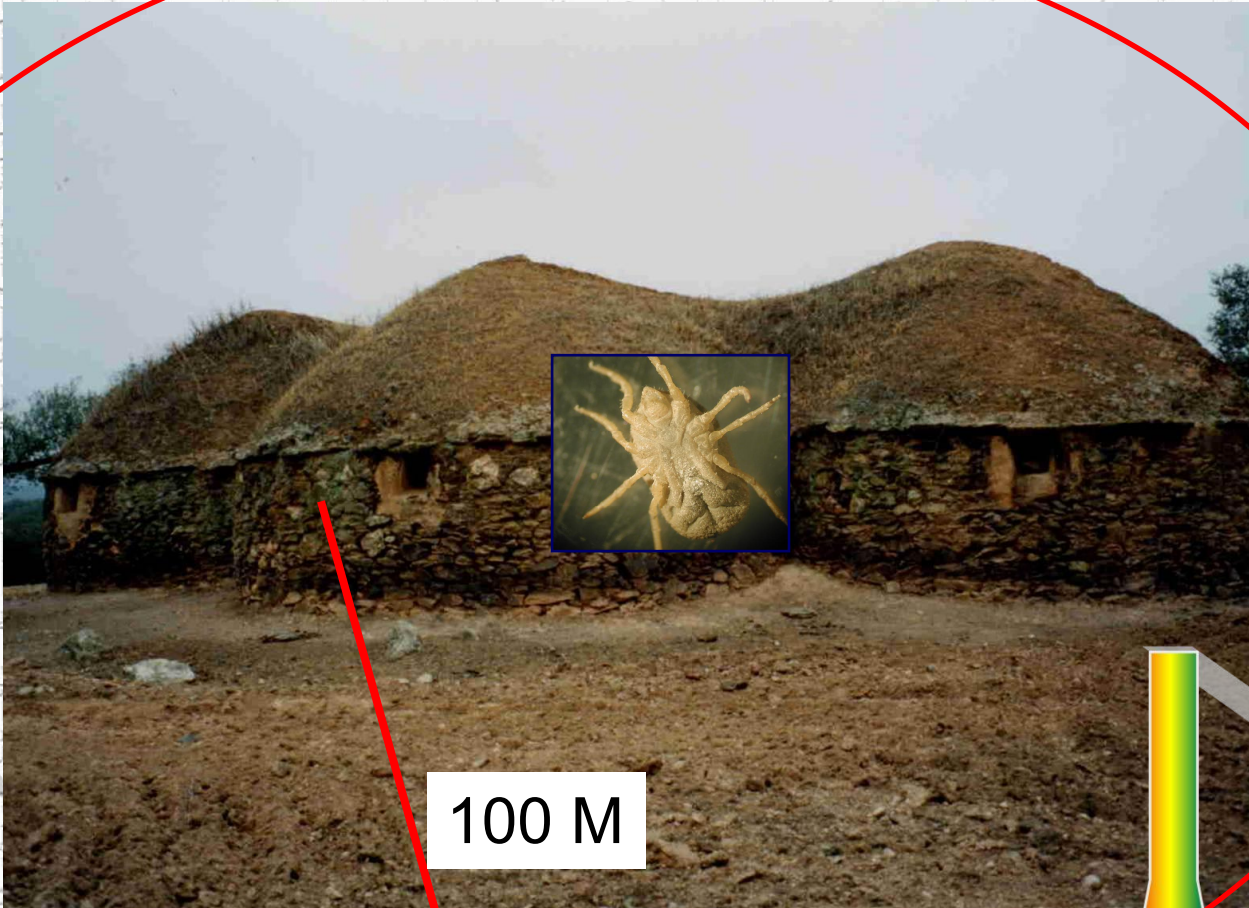
Sanchez-Vizcaino, et al 1979; 1982



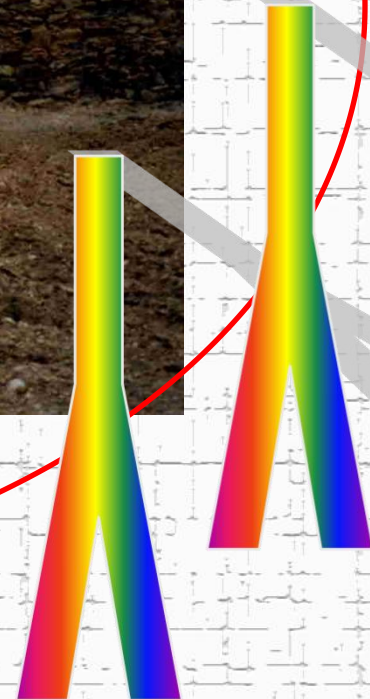
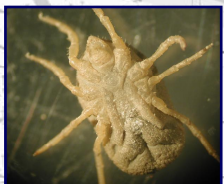
First ELISA detection for pig and ticks interaction

Canal, et al. 1982

Both very important for ASF eradication



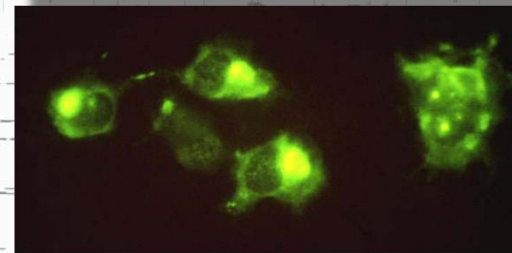
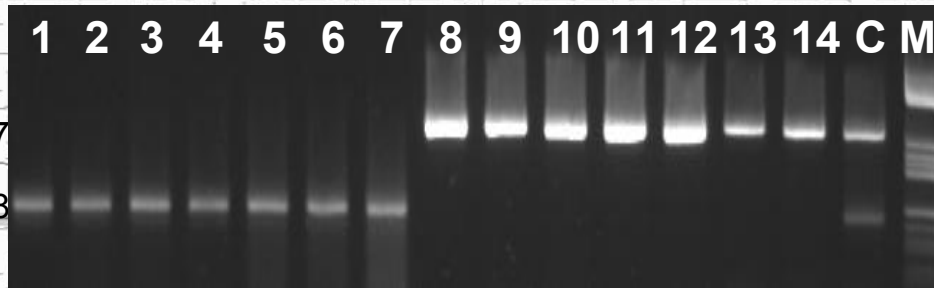
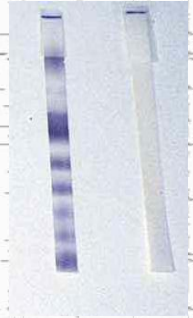
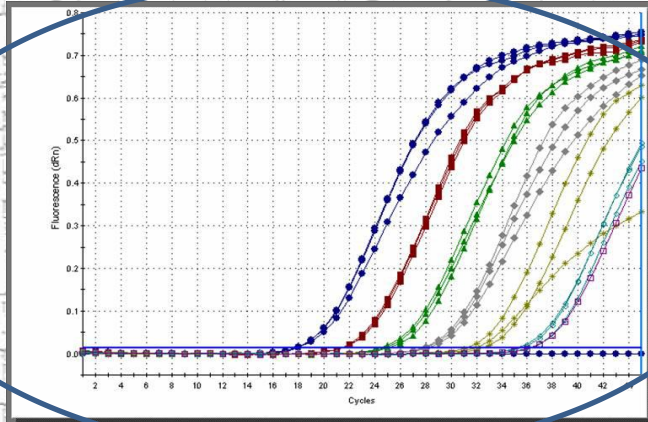
100 M



Additional Eradication's Key action:

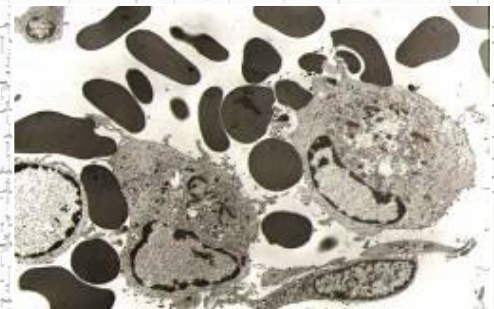
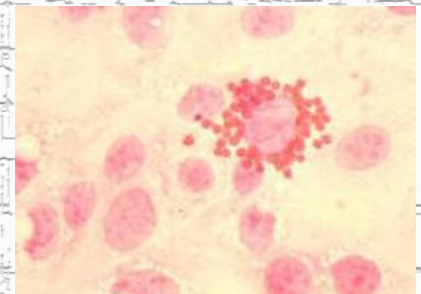
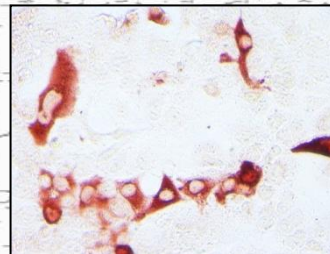
- a) Permanent epidemiological information to farmers**
- b) Good Early detection and diagnosis confirmation**
- c) Detection of positives and carriers animals by serology**
- d) Elimination of all positives and carriers animals**
- e) Improvements of biosecurity in farms (in side and outside)**
- f) Control of pigs movements. Identifications**
- g) Control of ticks (Elisa for ticks)**
- h) Economical compensation**

TODAY GOOD DIAGNOSIS TOOLS



CSF-3/4 + ASF-1/2

For all ASF genotypes

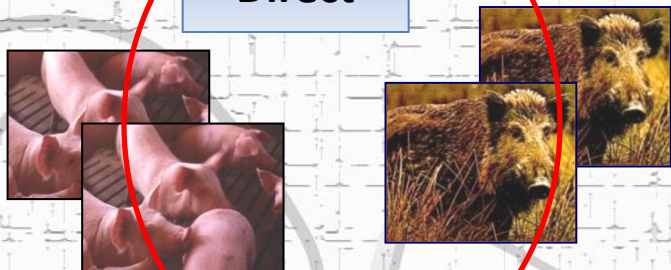


BOTH ANTIBODIES AND ANTIGEN DETECTION IS NEEDED

ASF TRANSMISSION ROUTES

Transmission

Direct



Indirect



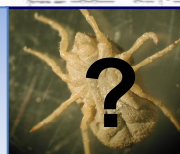
Swill feeding



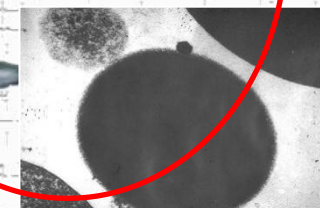
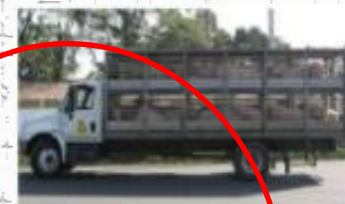
Origin of most outbreaks
Until now



Biological
Vectors



Only influenced in Local
SPREAD
Outdoor productions



ASF is NOT a very transmissible disease
Less than: FMD, PRRS, CSF...
But it goes everywhere



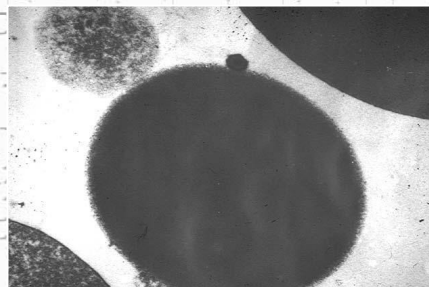
Faeces



ASFV: Routes of transmission

BLOOD!!!!

- Hemorrhages
- Necropsies
- Hunting
- Feed with blood

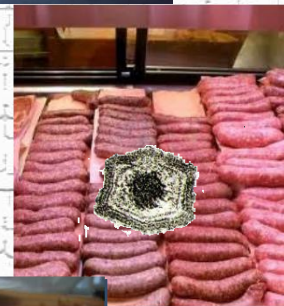
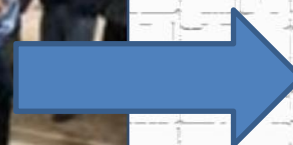


48 hours
Mellor *et al.* 1987

It Usually doesn't start as:
**EXPLOSIVE
INFENCTION**



200 μ l of blood
 3×10^6 copies



ASF virus is very stable in the environment

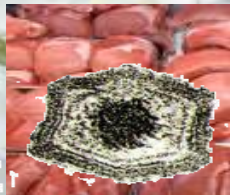


ASFv could be stable for long periods of time and even more when organic matter is present

ASFV in pigs, products and organic material

SWILL FEEDING

ASFv is highly resistant



110 days in
chilled meat



1000 days in
frozen meat



18 months in blood at
4°C



1 month in contaminated pig pens

THE MOST IMPORTANT POINT

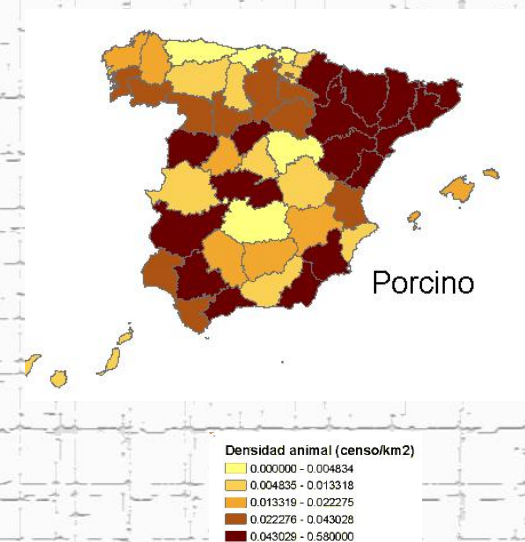
**MOTIVATION: Live with ASF
is possible but not competitive**

ALL STATEHOLDER HELPING

MORE RESEARCH FUNDING

The Spanish swine industry today

- **CONSUMPTION: 49,1 Kg/P/Y**
- **S. POPULATION: 29.971.357**
- **1º UE**
- **EXPORTATION:**
 - Meat: 2.038.521 Tm
 - 2º UE
 - 4º in the World



Source: MAPA 2017

CONCLUSIONS

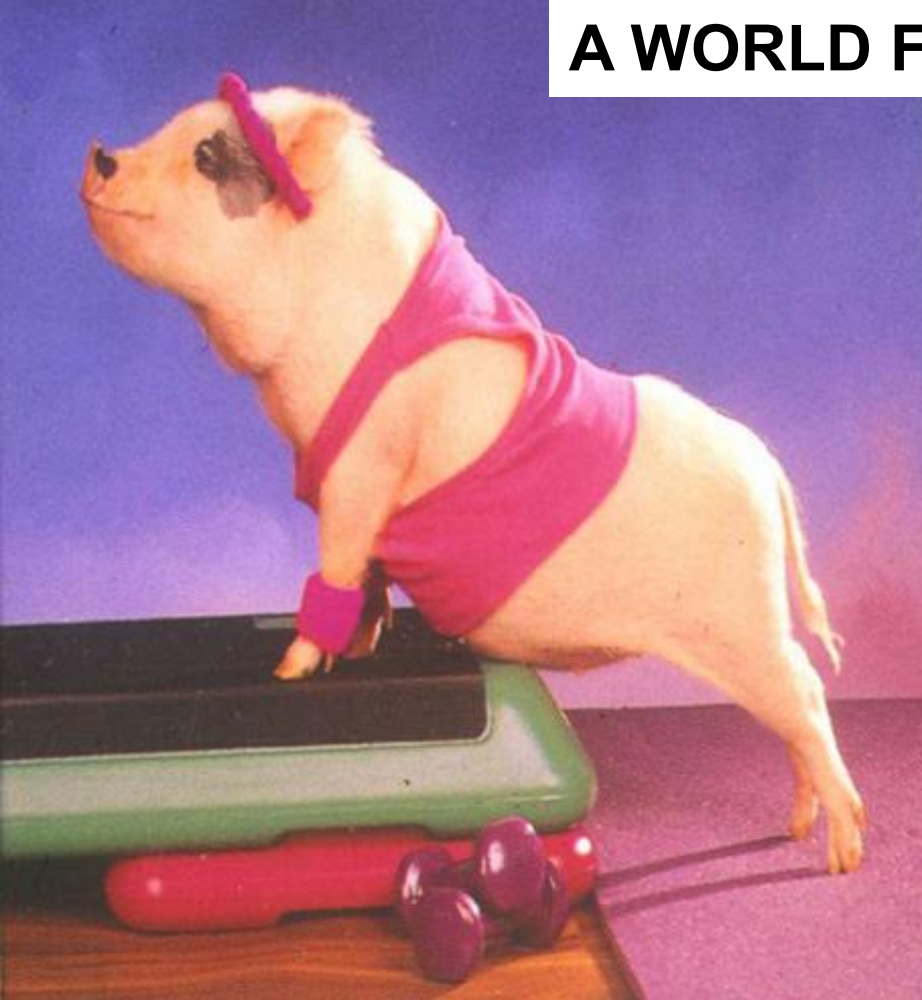
ERADICATION OF ASF IS POSSIBLE

THE EXPERIENCE IS ALWAYS VALUABLE

KNOWLEDGE AND TOOLS TO DO IT ARE AVAILABLE

LET'S DO IT. WE CAN

A WORLD FREE OF ASF



**Thanks a lot
Muchas gracias**

jmvizcaino@ucm.es