ASF eradication in Spain: What did we learn?

International Symposium on Prevention and Control of ASF

Beijing, April 2019

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

First, 1957
Second, 1960

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

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

Eradication in Spain in 1995
ASF out of Africa: III

Last, 2007
ASF the threat of the *global* pig industry

- More than 75% of world pigs population
- 3 continents
- More than 50 countries
- Different Epi Scenarios
Spain: Swine dates late 60s

Consumption: 8 Kgrs/person/year

Pig/Population: 6.032.000

Swine meat production: 258.000 Tm

All country affected of ASF
CSF & ASF

ASF 1960 - 1995
LACK OF KNOWLEDGE OF ASFv

VIRUS AND DISEASE EVOLUTION

MAIN ROUTES OF TRANSMISSION?

Botija et al 1982
TWO PRODUCTION SYSTEMS

OUT DOOR

IN DOOR
Swine Production System LATE 80s
A ENDEMIC COUNTRY

MAIN PROBLEMS WAS IN OUTDOOR PRODUCTION

INFECTED & CARRIERS ASF DP & WB

INFECTED SOFT TICKS
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

Reference test to confirm ASF presence
Malmquist and Hay, 1960

SOME ASF ISOLATE ARE NOT HA+
Botija 1980

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
**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

IN-DOOR

[Maps showing the evolution of ASF eradication in Spain from 1985 to 1995, with marked infected and free areas, and surveillance zones.]
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) COMPENSATION 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-Vizcaíno, et al. 1979; 1982

First ELISA detection for pig and ticks interaction
Canal, et al. 1982

Both very important for ASF eradication
Additional Eradication’s Key action:

a) Permanet 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
For all ASF genotypes

CSF-3/4 + ASF-1/2

TODAY GOOD DIAGNOSIS TOOLS

BOTH ANTIBODIES AND ANTIGEN DETECTION IS NEED
ASF TRANSMISSION ROUTES

ASF is NOT a very transmissible disease
Less than: FMD, PRRS, CSF…
But it goes everywhere
ASFV: Routes of transmission

**BLOOD!!!**

- Hemorrhages
- Necropsies
- Hunting
- Feed with blood

48 hours
Mellor et al. 1987

200 μl of blood
$3 \times 10^6$ copies

It Usually doesn’t start as:
EXPLOSIVE INFECCTION
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 FOUNDING
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
Thanks a lot
Muchas gracias