TESCHOVIRUS ENCEPHALOMIELITIS AND CLASSICAL SWINE FEVER SITUATION IN HAITI

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35% of the 800,000 existing peasant agricultural farms have more than 98% of pig population

Pig production is fundamentally backyard production

Commercial swine industry is not developed

No good available statistics in economical aspect of the swine production but pig has been generally considered as the account of the peasants.

No specific slaughters reserved to the pigs.

Slaughtering on the farm and/or at home
CHARACTERISTICS OF THE BACKYARD PIG PRODUCTION

- Bad sanitary conditions
- No respect of the animal welfare principles
- Low performances of the production in terms of growth, reproduction, consanguinity, weight of the new born piglets, etc.
- No possibility to respect any rules of biosecurity
- Feeding problems (quantity and quality)
- Pigs raised in some areas freely with risks to disseminate any viral disease as CSF.
MAIN CONSTRAINTS OF THE SWINE PRODUCTION IN HAITI

- High cost of pig food (wheat brand and other food ingredients as vitamins, minerals, etc.)
- Low level of technology used by the producers
- Lack of the rural credit
- Presence of the TESCHEN DISEASE
- Veterinary drugs no always available and very expensive for the producers
Teschovirus

The *Teschovirus* is a genus of the Picornaviridae family. This virus is responsible for Teschovirus encephalomyelitis in pigs.
Teschovirus encephalomyelitis (previously Teschen/Talfan diseases, and later enterovirus encephalomyelitis) is an acute condition of pigs characterized by central nervous system (CNS) disorders. Teschen is the name of the town in the Czech Republic where the disease was first recognized in 1929.
In the 1950s, the disease spread throughout Europe and caused huge losses to the pig breeding industry. Less severe forms of the disease were first recognized in the UK, where it was called Talfan disease, and in Denmark, where it was called poliomyelitis suum. Teschoivirus encephalomyelitis has not been reported in Western Europe since 1980 (Austria) and the disease is now considered rare.
Since 1996, the disease has been reported to the OIE by 9 countries as:

Epidemiology

• Teschovirus is relatively resistant to heat, pH 2 to 9, commonly used disinfectants and environmental factors
• Infected pigs shed virus in their feces, sometimes in large quantities, which contaminates the environment and infects other pigs
• The oral-fecal route of infection is probably the most important
• Teschovirus can persist for long periods in piggeries and in slurry
• It is highly infectious and can be readily carried to other farms on boots, clothes, and vehicles
Clinical Signs

- Fever
- reduced appetite (Anorexia)
- depression from one to three days
- Ataxia
- Hypersensitivity
- Slowly motor paresis develops
Morbidity and Mortality

• High morbidity and mortality (young pig)
• 70 to 90% of the pigs can die in few days
• Affect any category of pig
• Generally, Symptoms are stronger in young pigs (less 3 months age)
Pathology

- There are no gross lesions in the central nervous system (CNS), but there may be muscle atrophy particularly of the hind limbs.
- Histologically, lesions in the CNS may be seen in the dorsal root ganglia, brain stem and lumbar spinal cord (ventral horn).
Laboratory Diagnosis

- Histopathological examinations
- Identification of the agent
- Serological tests
Histopathological examination

- On formaldehyde-fixed samples of cerebrum, cerebellum, diencephalon, medulla oblongata and cervical and lumbar spinal cord.
- The virus multiplies in the CNS causing a non-suppurative polioencephalomyelitis with lymphocytic perivascular cuffs, especially in the spinal cord
Identification of the agent

• Virus isolation in cell cultures
• Virus neutralization with standard antisera
• Reverse-transcription PCR
• Indirect fluorescent antibody test
Serological tests

- Virus neutralization tests with standard strains of teschovirus serotypes
- Enzyme-linked immunosorbent assay
Labs Difference Diagnosis

• classical swine fever
• African swine fever
• Pseudorabies
• Poisoning substances (Arsanilic acids)
• Bowel edema
Teschovirus in Haiti
Samples submitted to US Laboratories from an ongoing swine disease in Haiti were positive for Teschovirus in March 2009 (FADDL and NVSL-Ames)
• February 2009: Notification to the animal health main office of case of pigs with locomotors difficulty in Artibonite areas (Desdunes, Grande Saline, Pont Sondé, l’Estère, St Marc, Verrettes, La Chapelle)

• April 2009: Extension to the center of the country and some west department
AREAS WHERE ENTEROVIRUS ENCEPHALOMYELITIS HAVE BEEN REPORTED IN HAITI SINCE FEBRUARY 2009
Actions conducted by the Ministry

- 3 nationals technicals missions to the affected areas to collect informations
- Collect of samples to be analyse in the veterinary labs of Haiti
- Epidemiological survey
- Sending of samples to two (2) different US veterinary labs
- Detection of the Teschovirus and circulation of circo virus in the samples
- Technical assistance asked to the FAO
• Notification to the DR
• Notification to the OIE
• Massive information campaign
• Education of the population about the disease
• Control of transportation of pigs from infected areas
• Focal depopulation in clinical affected pigs with compensation of the producers, than clining and desinfection
• Technical assistance found from APHIS/USDA
• Reception in the country of teams from VEP project, USDA, Plum Island Experts etc
• Confirmation of circo virus
• Acceptance of a US labs to do the vaccine
• Fonds from USDA to get the vaccine
• Reception of circo virus vaccine since January 2012 an essay
• Reception of the vaccine against Tescho virus
• Possession of Haiti of 30 000 doses for 15 000 pigs to be vaccinated (day 1 and 21 to get a better response)
• Cost of the dose is 0,38 us $
• Cost of the essay is: 50 000 us $
Conclusion

• The Circo virus vaccine doesn’t have any inmune effect on the Teschovirus disease because of the affectation by this last one in vaccinated pigs in Haiti

• The Staff expert that we can get good inmunization in pig so we can continue use this vaccine for the future control and prevention of this disease.

• Help from all partners was very useful in those 3 years of activities in the manage of this item
CLASSICAL SWINE FEVER SITUATION IN HAITI
1920: contamination of Haiti by Classical Swine Fever (CSF) that caused great economic losses and remained a constant threat to neighboring countries until 1984
1927: First vaccination against CSF
1979: Haiti infected by African Swine Fever
1984: Eradication of African Swine Fever, (Haiti and Dominican Republic free of CSF)
1996: recontamination of Haiti and Dominican Republic
1997: Estimation of the direct and indirect losses to US$ 8 Millions.
HISTORY OF CLASSICAL SWINE FEVER IN HAITI

- 1997: Organization of a regional workshop on emergency strategies to combat CSF in the Caribbean

- February 1998- March 1999: Preparation of a project document entitled: Project to eradicate the CSF and modernization of the Animal and Plant Health Systems in the Hispaniola Island

- October 1999: Meeting in Jamaica of representatives from CARICOM and European Union countries (Grant 2 millions Euros for implementation of a CSF regional project (Haiti, R.D, Jamaica, Bahamas and Belize.)

- 1999-2001: Continuation of the National vaccination with funds from the “Projet de Développement de l’Elevage Porcin” funded IDB (PDEP/IDB) but vaccination coverage was poor 20% and prevalence rate around 19%.
May 29, 2002: Official signature of the Project document funded by E.U.

June 2002: Starting of the project
April 2003: Memorandum of Agreement between APHIS/USDA, MARNDR, European Union, and IICA for the financing of the CSF program
2003: End of the EU financing

2003/2010: APHIS/USDA financing
February 2009 – May 2011: Contamination of the country by Teschen disease that complicates the evolution of the CSF program
INSTITUTIONS IN PARTNERSHIP WITH THE MARNDR IN CSF PROGRAM

- Animal Health Groups (GSB)
- IICA
- NGOs
- Ministry of Interior and Territorial Collectivities
- Local Authorities (Mayors, Casecs, Asecs, etc.)
- Ministry of Economy and Financing
- Agricultural Producers Association
MAIN ACTIVITIES AND STRATEGY OF THE CSF PROGRAM
Information

- Massive communication through the media
  - Radio spots developed and played through national, departmental and communal stations.
  - Posters, flyers, and information sheets developed and distributed.
  - Interviews

- Interpersonal Communication
  - Meeting with producers in public area (churches, public markets, etc.)
Preparation and distribution of CSF training guides and brochures

Training for rural producers, veterinary agents, veterinary technicians and veterinarians by the specialists of Animal health Direction

The reduction of the training budget in 2007 had caused a decreasing in CSF training activities.
TRAINING SESSION BEFORE CSF VACCINATION
Veterinary Agent Training
Veterinary agents Training
VACCINATION STRATEGY

- Vaccine used: PESTIFFA (Chinese strain CL)
- Adult pigs continue being vaccinated one time per year in spite of the recommendation to do it twice a year.
- Control of the cold chain relatively good.
- Vaccination is done door to door by using vehicles and motorcycles and some areas on foot.
- Bonus or incentive for the vaccinators.
- Financial participation of the producers in the CSF vaccination (Producers pay about 1/5 of the cost of the vaccination).
- Vaccination has 2 phases: intensive and continue.
### Division of the country in 3 big regions

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<th>Regions</th>
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EPIDEMIOLOGICAL SURVEILLANCE

MAIN ACTIVITIES

- Training to the CSF epidemiological surveillance Network Members
- Sanitary visits for the monitoring of Teschen and CSF diseases
- Organization of a data base on CSF and other similar diseases.
- Collection of blood samples and detection of antibodies and viral antigen.
- Notification of the CSF suspected cases to the veterinary service.
- Updating on CSF epidemiological surveillance procedures
EPIDEMIOLOGICAL SURVEILLANCE

EPIDEMIOLOGY STRATEGY

- Elaboration of Epidemiological surveillance and Laboratory Procedures
- Epidemiological surveillance network
- Functioning of the Departmental active diagnostic Unit
- Epidemiological surveys
- Improvement of the CSF veterinary Laboratory capacity
ACTORS OF THE CSF EPIDEMIOLOGICAL SURVEILLANCE

- Producers
- Private veterinarians
- GSB Veterinary agents
- Veterinary Agents from institutions other than Ministry of Agriculture
- Departmental and communal coordinators
- Coordinators of the rural section
- ONG involved in animal production and health
- Rural schools students
- Any people with capacity to identify the clinical signs of CSF disease
ANIMAL QUARANTINE

• Building and equipment of quarantine posts at the border (Malpasse and Anse-a-Pitres)
• Support to improve the sanitary control in 3 islands (la Gonave, la Tortue and l’île a Vache)
• Training of the quarantine inspectors
• Support to the Quarantine Direction to hire more inspectors by contract
REINFORCEMENT OF THE NATIONAL ANIMAL HEALTH SYSTEM

• Training of the personnel of the Animal Health Direction through different regional or international meetings and workshops
• Support to the organization of the central and field veterinary services
• Support to the other animal diseases programs such as: Rabies, anthrax, Newcastle, Avian Influenza, etc
• Support to the cooperation with local NGOS and other national and international institutions
• Development of binational cooperation (Haiti/R.D)
LEGAL FRAMEWORK

• Animal and Plant Health laws and regulations PROPOSALS available for more than five years but any progress in the implementation of the legal instrument by the government and the Congress.
• Official legislation obsolete (1934) and has to be updated
• However, availability of some legal norms and procedures in Rural Code of François Duvalier (1962) related to CSF
MAIN ACTIVITIES AND RESULTS CONDUCTED
VACCINATION
MEASURES ADOPTED DURING AN OUTBREAK

- Emergency vaccination around the area where outbreak occurred
- Meeting with producers from the contaminated area to inform them about the sanitary measures to avoid the dissemination of the CSF
- Information Campaign through radios and TV in the area
- No funds available from Public Treasure for slaughtering positive animals since 2008
CONCLUSION

- The real sanitary situation of the country in terms of the CSF is unfortunately unknown. No possibility to determine the number of outbreaks
  - Teschen disease
  - Dysfunctioning of the CSF Laboratory because of repairing of the building
- The risk of occurrence of the new outbreaks is always present
Vaccinate pigs in the 4 border departments and the 4 islands in the country every 6 months.

The 6 other departments will be divided into:
- North, Northeast, Artibonite
- South, Nippes, Grand’Anse

Pigs of these departments vaccinated every year.

Starting with GSB’s responsibility transfer process

Updating of the pig population census all over the country
Animal Quarantine

• Make functional the 4 control posts existing in the islands.
• Make functional the animal internal movement control post.
• Purchase and eliminate CSF suspected cases.
• Motivate the 4 islands population for not introducing pigs in the islands.
Training plan

• We plan to complete the training session of 450 veterinarian Agents this year.
• A special thank to every one who contributed to help the Ministry doing a better management of these diseases