

**Short-term Mission on
„Outbreak procedure – CSF“
-Animal Health-
within the CARDS Twinning Project BA05 IB AG 01
Sarajewo, 19th to 22nd of February 2007
Mission Report**

1. Name and Function of the Experts

Dr. Martina Mahnken, LAVES, Oldenburg

Dr. Sandra Blome, EU Reference Laboratory for CSF

Dr. Joachim Wiedner, LVU Rotenburg Wümme

Dr. Carsten Görner, LVU Cuxhaven

2. Objectives and tasks of the Mission

The visit was assigned for the activities as lined out in the Twinning Contract under 3.1. Specified tasks were:

1. Identification of BiH CAs and counterparts in order cooperate with them in working out epidemiological surveillance studies, national control and eradication programmes and training programmes for veterinary officers at all levels.
2. Identification of, and agreement on, priorities, purpose, and need of the above mentioned studies, control and eradication programmes.
3. Agreement on a working structure and methodology for future work and cooperation.
4. Analysis and assessment of the epidemiological situation, disease control strategy and diagnostic measures as well as capacities and preventive measures regarding CSF control in BiH.
5. Definition of prerequisites for a national CSF eradication programme and the baseline of this programme.
6. Based on the findings, creation of a “to-do” list for the Task-Force “Animal Health” to be accomplished until the next expert mission.
7. Definition of ways to report activity progress and work results.
8. Definition of gaps and constrains for the preparation and implementation of a CSF control programme.
9. Agreement on an indicative time frame for the setting up of studies and programmes.

3. Time Schedule and Activities

19th February 2007 - Sarajevo

Meeting with representatives of the State Veterinary Office BiH.

Attendees: Martina Mahnken, Sandra Blome, Joachim Wiedner, Carsten Görner, Karoline Schollmeyer, Edin Lendo, Darko Čobanov, and Slavisa Krestalica

20th February 2007 - Bjeljina

Meeting with representatives of the local veterinary unit and the veterinary inspector in charge.

Attendees: Martina Mahnken, Sandra Blome, Joachim Wiedner, Carsten Görner, Edin Lendo, Darko Čobanov, Milos Madjarac, Novalina Mitrovic, Mladen Jovanovic, and Dragan Petrovic

- Implementation of program of classical swine fever control
- Reporting procedure
- Outbreak management

21st February 2007 – Banja Luka

Group 1:

Meeting with representatives of the local veterinary unit and the veterinary inspector in charge.

Attendees: Martina Mahnken, Joachim Wiedner, Carsten Görner, Edin Lendo, Darko Čobanov, Momcilo Lucic, and Goran Mistic

- Implementation of program of classical swine fever control
- Reporting procedure
- Outbreak management

Group 2:

Meeting with laboratory representatives that deal with CSF diagnostics

Attendees: Sandra Blome, Rodoljub Trkulja, and Violeta Santrac

22nd February 2007 - Sarajevo

Meeting with representatives of the working group for implementation in the field of animal health (Task Force “Animal health”).

- Mission report presentation
- Discussion about mission findings and recommendation about models of solutions
- Implementation and making of action plan

Attendees: Slavisa Krestalica, Radmila Čojo, Lilijana Lučić

4. List of acronyms

Ab	Antibody
Ag	Antigen
BiH	Bosnia and Herzegovina
CAs	Competent authorities
CSF	Classical Swine Fever
CSFV	Classical Swine Fever Virus
DB	District of Brčko
ELISA	Enzyme-linked immunosorbent assay

EVS	Entity Veterinary Services
FAT	Fluorescent Antibody Test
FBiH	Federation of Bosnia and Herzegovina
IPT	Immuno-peroxidase test
MoAFWM	Ministry of Agriculture, Forestry, and Water Management of RS
MoAWMF	Ministry of Agriculture, Water Management, and Forestry of FBiH
MoFTEA	Ministry of Foreign Trade and Economic Affairs
PCR	Polymerase chain reaction
RS	Republica Srpska
SVO	State Veterinary Office

5. Acknowledgements

The twinning expert team would like to thank all parties concerned for the constructive cooperation and the friendly response. Special thanks to Dr. Karoline Schollmeyer, DVM Edin Lendo, and Dr. Darko Čobanov.

6. Summary of Results of the Mission

6.1 Competent Authorities and Counterparts

6.1.1 Veterinary Administration

The competent authorities (CAs) in the field of veterinary administration and animal disease control are the State Veterinary Office (SVO), and the veterinary services of the Republic of Srpska (RS), the Federation of BiH (FBiH), and the District of Brčko (DB). These authorities are responsible for the implementation of veterinary norms and rules according to “The Veterinary Law in Bosnia and Herzegovina”.

The SVO was established 2000 under the jurisdiction of the State Ministry of Foreign Trade and Economic Relations (MoFTEA) and has, amongst others, responsibility for the development of national infectious animal disease control strategies. In the future, the SVO will coordinate and facilitate the efforts in the field of animal disease control through compilation and evaluation of data. The SVO supports CAs on entity level.

Competent veterinary authorities of FBiH, RS, and DB are placed under the respective veterinary departments of the ministries of agriculture or, with regard to DB, the department of agriculture. The two entities RS and FBiH have different structures. While RS has a centralised administration, the FBiH is divided into cantons and municipalities which possess their own regional administration.

Impression:

Although the above mentioned authorities are subordinated to the SVO, responsibilities are not clearly defined, and transparency of the animal disease control is lacking. The SVO does not seem to get the compliance and assistance that would be necessary to get a well-founded insight and survey in the effectiveness of animal disease control. This seems to be mainly due to underreporting of necessary data and lack of communication.

Secondary legislation and rule books are not harmonised among the entities. The Annual Order should have a binding character for all parties; but not all measures are implemented. Financial issues seem to be of great relevance.

Recommendation

It is recommended that all parties concerned should discuss and implement harmonized and more transparent structures for animal disease control. All laws and rules need power

and a mandatory character. Communication between entities and with the SVO should be extended and intensified. Clear reporting channels and chains of command are prerequisites for any effective disease control measures. The SVO must act as link between the entities and should take responsibility for the compilation of a reliable data cadre.

6.1.2 Laboratories for CSF

Bosnia and Herzegovina possess a network of seven veterinary diagnostic laboratories. Three laboratories perform CSF diagnosis.

Veterinary Institute of Banja Luka: Pathology, Ag-ELISA, (Ab-ELISA), (FAT)

Veterinary Department of Bjeljina: Ag-ELISA

Veterinary Faculty of Sarajevo: Ag- and Ab-ELISA

Impressions:

It did not become clear which laboratory acts as National Reference Laboratory for CSF.

The expert team visited laboratories of Bjeljina and Banja Luka. Besides pathology, only Ag-ELISAs were routinely used for confirmation of CSF. Basic quality management was established in both laboratories in terms of standard operating procedures and result documentation and recording. Biosafety was not assessed but was part of another mission (see mission report <http://www.vet.gov.ba/twinning-proj/Default.aspx?cid=370,1,1>).

The Veterinary Institute of Banja Luka would have the possibilities to implement PCR and FAT on a medium term base. Room and financing problems need to be solved.

Recommendations:

If still applicable, a National Reference Laboratory (NRL) for CSF should be designated. The laboratories performing CSF diagnosis should be encouraged to participate in national inter-laboratory comparison tests organized by the designated NRL. In addition, the NRL is invited to participate in the annual EU ringtrial that is conducted by the EU Reference Laboratory (EURL). Necessary contact data should be sent to the EURL as soon as possible.

In view of intended CSF monitoring and surveillance plans, laboratories should enlarge their scope of diagnostic methods. As a first step, Ab-ELISAs should be routinely implemented and validated in each laboratory.

As mentioned above, the Veterinary Institute of Banja Luka would have the possibilities to implement both polymerase chain reaction (PCR) and fluorescent antibody tests (FAT). The laboratory is equipped with cryostat technology and possesses experienced personnel. Therefore, the routine use of FATs or immunoperoxidase tests (IPT) is recommended. Only a fitting FITC-conjugate has to be chosen. The EURL recommends to make contact for example with the Dutch NRL as they use FAT on a routine base.

Personnel should be sent to the EURL or other laboratories in order to get training in CSF specific PCR methods and related matters. Room use planning has to be done carefully. EU experts should help implementing on site.

It is recommended to implement cell culture based techniques such as virus isolation and virus neutralization tests on a medium to long term base. Biosafety of laboratories has to be upgraded for these purposes.

Differential diagnosis with regard to Bovine viral diarrhoea virus and Border disease virus should be implemented on a long term base.

6.2 Priorities, purpose and need of control and eradication programmes

At the moment, an effective and transparent CSF control programme is not in place in BiH. Despite mandatory vaccination of all pigs, outbreaks of CSF occurred every year in different parts of the country. For this reason, a national CSF control and eradication programme should be implemented as soon as possible.

Prerequisite for an effective CSF control and eradication are the already mentioned harmonization of legislation and the implementation of transparent reporting channels. Compliance of all parties is of utmost importance.

Recommendations:

A national contingency plan should be formulated covering all issues related to control and eradication of CSF in BiH. The purpose is a clear and transparent chain of mandatory measures. Contingency plans of different EU Member States as well as EU legislation should serve as a template.

6.3 Working structure and methodology

The proposals in the “to-do” list and the annexes should be thoroughly discussed and implemented if applicable. Milestones should be defined and the progress reported in a full written account. A draft control programme should be prepared as soon as possible based on the templates discussed.

6.4 Epidemiological situation, disease control strategy and diagnostic measures

The majority of pigs are kept by small farmers in mostly extensive production systems (backyard holdings). So far, international trade is no issue. Only few commercial farms intend international trade.

The disease occurred mainly throughout the country. However, a detailed analysis regarding disease prevalence during the different months of the year was not presented and would be needed in future. Only basic epidemiological data and information exist about spreading and transmission of disease from holding to holding or from region to region. No risk assessments or risk analyses seem to have been made. Although proven evidence is missing, trade of pigs from neighbouring countries and swill feeding is thought to be responsible for the introduction of the disease.

The role of wild boar as a reservoir for CSF virus and as a source of infection for domestic pigs is unclear.

During previous years, domestic pigs in BiH have been vaccinated by using different live attenuated vaccines (C-strain vaccines), for example PLIVAK[®] - KS produced by Veterina, Croatia. While in RS vaccination is paid by the government, pig owners in FBiH are obliged to pay for the mandatory vaccination. Mainly due to this fact, vaccination coverage varies considerably among the entities. An approximately sufficient coverage was only met after covering the costs.

With regard to legislation, the following information was obtained: In accordance with article 10 of the “Law of Veterinary Medicine in Bosnia and Herzegovina”, the SVO issues a yearly “Decision on measures of control of infectious and parasitic diseases of animals and their implementation and financing” (Annual Order). This order includes the measures on CSF with regard to vaccination, identification of vaccinated animals, pig trade, and monitoring of wild boars. The Annual Order has to be transferred into “Operative Plans”

by the veterinary services of the entities by January 31st of each year. Subsequently, the veterinary stations are responsible for “Action Plans” referring to these operative plans. The deadline for “Action Plans” is February 28th of each year.

Secondary laws and rule books concerning CSF, e.g. the “Decision on measures for suppression and eradication of CSF (OJ SFRJ, No. 06/88), are mainly based on legislation of former Yugoslavia and are not harmonized among the entities and DB. The legislation has not been updated for a long time and contains requirements and techniques that are not acceptable anymore.

Confirmatory diagnosis of CSF is mainly based on the Ag-ELISA that is known to show only moderate performance in terms of sensitivity and specificity. Experienced pathologists perform post mortems on suspect cases. Details and recommendations can be found under 6.1.2.

Impressions and Recommendations:

With a view to harmonization with EU standards, some important aspects of control and eradication of CSF have been identified which do not comply with EU-legislation. Among these are: Swill feeding (although forbidden by law it is in reality common practice), non-existence of registration of pig holdings, only basic epidemiological tracing, no harmonized sampling strategy, partly inappropriate diagnostic methods prescribed by rule books (animal experiments), restriction zones are not routinely established, cleaning and disinfection is not properly regulated and nearly unfeasible under the conditions of non-commercial holdings.

The above mentioned aspects should be taken into consideration for amending any legislation.

With regard to vaccination, costs for vaccine and vaccine application should be covered countrywide in order to get sufficient vaccination coverage.

To collect epidemiological data, a standard form should be designed and used on a mandatory base. Forms available at the Veterinary Institute in Banja Luka could be supplemented with a few additional points and used thereafter. Results and data must be sent to the SVO for evaluation. Networking is of great importance.

To supplement traditional epidemiological data it is recommended to send samples from recent outbreaks for genetic typing. The EURL offered to carry out genotyping and to draw phylogenetic trees.

In order to get a clearer picture of the situation in wild boar, it is necessary to obtain and analyse data and information. Although prescribed in the Annual Order, wild boar samples are rare. It could enhance compliance of hunters to cover the costs of Trichinella tests.

As mentioned above, the legislation regarding CSF needs thorough revision and harmonization. EU legislation and old rules should serve as a template.

Funding of control measures and diagnosis need to be discussed.

6.5 Proposal and prerequisites for a national CSF control plan

An important prerequisite for a national CSF control plan is a strict and nationwide chain of command as well as harmonized reporting channels.

A proposal for a CSF control programme based on a Romanian example that was discussed during the expert visit is attached in Annex 1. Although the Romanian template mainly aims at CSF control in non professional pig holdings, these measures should be valid for all pig holdings.

The experts were told that the German “Schweinehaltungshygieneverordnung” was translated into local language. The measures mentioned in this legislation could be applicable in commercial pig holdings that aim at a non-vaccination policy on a long term base.

At the moment, a non-vaccination policy is not recommended on a short term base as too many factors are still unknown including the situation in wild boars. Nevertheless, improvement of biosecurity is strongly recommended in order to establish a basis for later non-vaccination policy and compartmentalisation.

6.6 General “to-do” list

The following points should be realised as soon as possible:

- Update of all national regulations concerning CSF and harmonization with EU legislation
- Nationwide uniform control measures in case of CSF outbreaks
 - Reporting channels
 - Process instructions and flowcharts
- Chain of command and data reporting channels between laboratories and SVO should be harmonized and put into writing
- Regular information exchange should be established between CAs of RS, DB and FBiH
- Electronic recordation of all pig holdings (pig database). Minimum information that should be gathered:
 - Name and address of the owner
 - Animal numbers and type (fattening, breeding etc.)
 - Number of vaccinated pigs recording ear tag numbers
 - A template proposal is attached in annex II.
- Farmers should be encouraged to document animal movements, veterinary aspects, and other relevant data in a stable log/ records
- Education of farmers by means of seminars on CSF
- Preparation of a CSF data sheet that should be distributed to all pig owners. Information should include:
 - CSF clinical signs
 - Risk factors for introduction
 - Preventive measures
 - Reason and legitimation of control measures such as vaccination
- Wild boar monitoring (CSF) should be established
 - Make contact to hunting associations and individual hunters
 - Virological examination of tonsil samples (better acceptance through covering costs of trichinella tests?)
- CSF monitoring in domestic pigs
 - Organ samples at slaughterhouses (spleen, tonsils, blood samples)
 - Blood sampling in the context of vaccination
- Extension of laboratory diagnostic capacities
 - Antibody detection by means of antibody ELISA
 - Polymerase chain reaction (PCR) and fluorescent antibody test (FAT)
- Participation in international ringtrials

7. Reporting activity progress and documentation of work results

Activity progress should be recorded in fully written accounts. Monthly reports should be gathered on entity level and submitted to the SVO. The SVO should be responsible for documentation and evaluation of these data sets.

During the CSF control programme, additional reports should be prepared twice a year as mentioned below. Should a three year programme be considered, a thorough evaluation of the situation is mandatory after two years.

8. Gaps and constraints

The main constraints are the chain of command and the reporting channels in a country including entities with totally different administrative structures (centralized structures versus federal system with cantons and municipalities). Harmonized legislation and extensive communication between different parties are therefore of paramount importance.

So far, the SVO does not have the superordinated, supportive and linking role it is supposed to have. Trust in the SVO's work is lacking and the compliance is quite low. To promote the SVO's work, a clear definition of duties, authorities, and the field of responsibility is needed.

9. General Remarks Concerning the Project (without direct relevance for the mission)

The language barrier was quite large. Important meetings should include an interpreter to ensure comprehensive communication.

At the end of the meeting, an open and constructive discussion emerged between all parties (representatives of the different entities) that should be resumed.

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Annex 1:

Proposal for an CSF control programme for pigs holdings in BiH

(1)

At the moment, the programme has the character of a nationwide control measure. Later on, it could have the character of an emergency measure, valid only in an area in which pig holdings (or feral pigs) are endemically infected with CSF virus.

A region or country is considered to be endemically infected with CSF virus when an increasing number of primary outbreaks or outbreaks without apparent epidemiological link have been registered and where the likelihood of continuing outbreaks exists.

To do: **This region would have to be identified by BiH CAs.**

Minimum standard of biosecurity denotes that:

- The holding is under regular veterinary supervision.

To do: **Funding should be thoroughly discussed**

- Animals and holding are registered in the central data bank.
- The holding keeps a register in which all relevant information for epidemiological tracking and tracing in case of a CSF outbreak is recorded (e.g. introduction of animals, treatments, mortalities, etc.)
- Swill feeding is only allowed after proper heating procedures. **Prohibition is intended on a long term base.**
- The pigs are kept indoors or outdoors in double fenced premises and only authorized persons have access to the pigs. **Semi-wild pigs should be housed on a long term base.**
- Pigs are introduced from other holdings with a minimum standard of biosecurity only.
- The pigs should be slaughtered in authorized abattoirs. **Home slaughtering may be allowed under strict control measures.**

The aims of the measures are to decrease the infection pressure to a minimum and to stop perpetuation of CSF virus and to encourage the owners to increase the level of biosecurity. On a long term base, this programme shall lead to a ban of vaccination.

The programme should not last longer than 3 years and should be conducted in two phases. The scope of phase one of the programme is to stop spreading and perpetuation of the CSF virus as soon as possible. In phase two measures are taken to eliminate the virus from the pig population.

To do: **Phases 1 and 2 should be worked out in detail**

(2)

Prior to the start of the programme an expert group (epidemiologists/virologists) to support the management should be established which supervises and guides the programme. The experts should exclusively devote themselves to the programme. The key tasks of the expert group are:

- To co-ordinate all activities related to the programme, e.g. vaccination campaigns, sampling, laboratory diagnosis, etc.
- To conduct the epidemiological inquiry according to a standard protocol
- To identify and investigate contact herds (both up and down)
- To analyse the epidemiological situation in both, domestic pigs and wild boar in order to gather more accurate information on the CSF situation in general and to identify or confirm the major risk factors to focus on
- To co-ordinate the activities with other institutions, e.g. police, forestry department, communal authorities, external experts, industry, etc.
- To organize and conduct training programmes for veterinarians, pig holders and other persons involved in the programme. The educational measures should lead to an improved hygienic situation of the holdings and to a better understanding of the epidemiology of CSF
- To analyse and process all data and present them regularly, at least twice a year, to the national and European authorities.
- To organize and co-ordinate a nationwide CSF info campaign for pig holders

(3)

Phase one of the programme should start as soon as possible.

Vaccination with a live attenuated CSF vaccine (C-Strain vaccine) must be applied to ensure a fast and efficient protection. The C-strain vaccine is capable of inducing a lifelong sterile immunity. Protection starts already few days after vaccination. At present no marker vaccines are available which fulfil these requirements.

To do: **Experiences from Romania (Marker Vaccine) should be followed and taken into consideration, vaccination intervals should be checked.**

The vaccination campaign must be a co-ordinated action lasting no longer than four weeks. All pigs within the endemic region older than eight weeks must be vaccinated. In addition, piglets of non vaccinated sows older than two weeks must be vaccinated. No movements of pigs are allowed until the vaccination campaign is officially finished.

The emergency vaccination measure must be linked unconditionally with the following additional measures:

- A functioning expert group coordinates all activities
- Disposable needles and syringes are used for each holding. (One needle and syringe per holding. Ideally one needle per pig).
- Vaccinated pigs are tagged with an ear tag
- Each holding receives a register (booklet) where all data listed under (5) are recorded.
- Blood samples to establish the serological status quo ante vaccination are collected.

From villages where CSF occurred during the last year at least 59 samples from different holdings are collected. From villages where CSF did not occur at least 10 samples from different holdings should be taken. The samples are examined with a registered antibody ELISA for CSF.

To do: **The paragraph above should be amended in terms of sample numbers etc.**

- Clinically diseased animals are not vaccinated. If symptoms might be linked to an infection with CSF virus, samples for virological examination are taken.

(4)

Phase two of the programme starts after phase one has been completed.

Emergency vaccination with a live attenuated CSF vaccine will be continued at monthly intervals as follows:

- All piglets which have not been vaccinated in the first vaccination campaign
- All piglets born to vaccinated sows will be vaccinated at the age of 8-9 weeks.
- All non-vaccinated newly introduced stock will be vaccinated.

The vaccination measures in phase two must be linked unconditionally with the following additional measures:

- Implementation of an education and awareness campaign for animal holders and local vets. Educational measures should lead to an improved hygienic situation of the holdings and to a better understanding of the epidemiology of CSF.
- Encouragement of owners to report suspicions of CSF (e.g. by means of incentives).
- In case of an outbreak virological examinations are conducted in all neighbouring holdings, all suspect holdings and all holdings where an epidemiological link has been found. For virological examinations the PCR-method is used. In addition, serological enquiries are performed in all neighbouring holdings, all suspect holdings and all holdings where an epidemiological link has been found.
- CSF virus isolates are typed (sequence analyses) **The EURL offered to do so.**
- Clinical examinations of all pig holdings are conducted twice a year according to the diagnostic manual.
- Registration and identification of pigs and pig holders are completed
- Provisions for safe trade on markets are made. Only fully traceable pigs are allowed on markets.
- Provisions for full registration of transport movements are made so that tracking and tracing is possible.
- Provisions are made to ensure that meat and meat products are only for self consumption or for the local market within the vaccination area.
- As long as vaccination is carried out to support other measures, only vaccinated pigs are allowed on markets

Additional notes:

- Make provisions, that a representative number of slaughtered pigs are examined virologically for the presence of CSF virus. For virological examinations the PCR-method should be used. The same samples used for trichinella examination can be used for CSF although kidney, lymphnode or tonsil would be optimal.

(5)

A reliable, complete and up-to date herd registration system must be implemented immediately. Information on the following topics must be provided by this system:

- o Owner
- o Address of holding
- o Number of animals and category
- o Management (e.g. intensive, outdoor, semi-wild)
- o Productive orientation (fattening, reproduction, self consumption)
- o Sanitary qualification (accredited officially free, etc.)
- o Level of biosecurity
- o Movements (introduction of pigs, selling of pigs, visit of markets)
- o Veterinary measures

A separate register of animals, health records, (veterinary) treatments, inseminations, matings, movements of animals must be in place at the holding itself.

(6)

Preliminary evaluations of the programme must be conducted by the expert group on a regular basis, at least twice a year. At the end of the second year of the programme the first substantial analysis of the situation must be presented. According to the presented results further plans will be made.

Annex II:

Record for pigs

Page No:

Name and address:.....

Registration-No:.....

Total pig number:.....

Record date:.....

Date	Purchase/Birth		Dispatch		Ear tag No.	Previous owner / Purchaser Name, Address	Vaccination			Remarks
	Number	B/P	Number	D/SI/S			Number	Specificity	Vet	

Total pig number (carryover).....

* B = Birth, P = Purchase, D = Death, SI = Slaughter, S = Sale