



ECTAD-FAO Training Workshop on “Risk analysis, risk-based surveillance and spatial analysis, to strengthen HPAI surveillance and control”

Pyramid Hotel, Cairo - Egypt, 22-26 March 2009

OSRO/EGY/701/USA “Strengthening Avian Influenza Detection and Response” (SAIDR)



First Mission Report

Written by

Flavie GOUTARD

Agnes WARET-SZKUTA

Report N° : 2009/

Avril 2009



CIRAD - Département Environnement et Sociétés
UR AGIRs « Animal et Gestion Intégrées des Risques »
TA C-22/E, Campus international de Baillarguet
34398 Montpellier cedex 5 - France

AUTEURS :

Flavie GOUTARD
Agnes WARET-SZKUTA

ACCES AU DOCUMENT :

Service de Documentation du CIRAD
(Bibliothèque de Baillarguet)

ORGANISME AUTEUR :

CIRAD- UR AGIRs

ACCES à la REFERENCE du DOCUMENT:

- Libre

MISSION FINANCEE PAR : FAO

REFERENCE :

TITRE : ECTAD-FAO Training Workshop on “Risk analysis, risk-based surveillance and spatial analysis, to strengthen HPAI surveillance and control”

TYPE D’APPROCHE :

Atelier de formation délocalisé

DATE ET LIEU DE PUBLICATION :

Avril 2009, Montpellier, France

PAYS OU REGION CONCERNES :

Egypte

MOTS CLES : Formation, Analyse de risque

H5N1-HPAI, SIG

RESUME :

Une convention vient d’être signée entre la FAO-Egypte et le CIRAD afin de préparer deux ateliers de formation sur de l’analyse de risque appliquée à la surveillance et sur de l’analyse spatiale. Cet atelier, organisé par ECTAD-FAO en collaboration avec le CIRAD et le Ministère de l’Agriculture et des réclamations agraires Egyptien est le premier de ces deux ateliers. L’objectif visé est de former des agents des services de l’agriculture à l’analyse de risque, aux méthodes qualitatives et quantitatives d’estimation du risque et aux principes de la surveillance orientée. La formation s’est organisée autour de présentations conventionnelles, de travaux de groupes et d’exercices pratiques utilisant un logiciel de modélisation du risque (@Risk sur Excel). L’atelier a rassemblé 10 participants. Il a permis d’améliorer significativement les connaissances en analyse de risque et de passer en revue différents aspects de la surveillance de l’influenza aviaire hautement pathogène. La grande motivation des participants ainsi que leur participation active aux activités du cours ont contribué à la réussite de l’atelier. Les discussions organisées lors des groupes de travail ont permis de passer en revue et de faire une lecture critique des plans nationaux de surveillance de l’Egypte pour l’influenza aviaire hautement pathogène. Suite à cet atelier, les participants doivent préparer leur propre analyse de risque, « Evaluation du risque d’introduction de H5N1-HPAI dans le district de Gharbia à partir du district de Behira au cours de la période hivernale (de novembre à mars) », le modèle conceptuel ainsi que l’analyse qualitative de cette question doivent être effectués avant le démarrage du deuxième atelier.

SUMMARY:

A Letter of Agreement has been recently signed between FAO-Egypt and CIRAD to provide two technical workshop training on Risk Analysis / Risk-based surveillance and on Spatial Analysis. This workshop organised by ECTAD-FAO in collaboration with CIRAD and the Ministry of Agriculture and Land Reclamation of Egypt is the first of the two technical workshop planned. The objective was to train national staff members of the government in risk analysis, qualitative and quantitative risk assessment and risk-based surveillance. The training period was shared between conventional lectures, group works and practical using risk analysis computer modelling environment (@RISK with Excel). The workshop gathered 10 participants from GOVS. The training successfully enabled to enhance the crude risk analysis knowledge of the participants and to review different aspects of HPAI risk-based surveillance. An important motivation of the attendees and a very good participation in all activities contributed to the success of the workshop. Discussions held during working groups enabled to review and criticize HPAI surveillance plans of Egypt. Following this workshop participants have to work on their own risk question “Risk of introduction of H5N1 HPAI in Gharbia governorate from Behira governorate during winter time (between November to March)”, the conceptual framework and the qualitative analysis should be done before the kick-off of the second workshop.

List of acronyms

CIRAD	Centre de Coopération Internationale en Recherche Agronomique pour le Développement (French Agricultural Research Centre for International Development)
ECTAD	Emergency Centre of Transboundary Animal Diseases
FAO	Food and Agriculture Organization of the United Nations
HPAI	Highly pathogenic avian influenza
MCQ	Multiple choice questionnaire
RA	Risk Analysis
TADs	Transboundary animal diseases

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1. Background

Since HPAI was first reported in Egypt in February 2006, the disease has appeared as three epidemics occurring during the cooler winter months. The first epidemic of HPAI was in February to April 2006. It occurred mostly in poultry farms, broilers in particular. A second, less prominent epidemic, starting in December 2006 and continuing to April 2007, was mainly in backyard poultry. During the summer months of 2007, the number of diagnoses of HPAI fell to a very low level, but in December 2007 a third epidemic occurred which spread into 2008. Over the period since HPAI was introduced to Egypt, the GOVS Epidemiology Unit has been increasing its capacity to store and analyse data. The most complete dataset assembles records on outbreaks from the beginning of 2007 and should start to provide valuable information on the epidemiology of HPAI in Egypt.

Considering the good progress being made by SAIDR and GOVS with regard to collection and recording of surveillance data there is now a need for risk mapping and analysis of the data in order to provide information and feedback to stakeholders including managers in MALR on policy formulation to strengthen HPAI control.

The Food and Agriculture Organization of the United Nations (FAO) continues to provide technical advice and assistance to the Ministry of Agriculture and Land Reclamation (MoALR) and supports MALR in all aspects of HPAI control through implementing Strengthening Avian Influenza Detection and Response in Poultry in Egypt (SAIDR), project funded by USAID.

The objective of the Letter of Agreement assignment is to enable the veterinary services to conduct risk analysis and mapping with the aim of improving overall HPAI H5N1 surveillance and control in Egypt, as part of the implementation of the FAO component of the USAID-funded project Strengthening Avian Influenza Detection and Response in Poultry in Egypt (SAIDR).

The CIRAD team will assist the Cairo-based ECTAD team participating in FAO's joint operations with the Egyptian veterinary authorities in the Ministry of Agriculture and Land Reclamation (MALR) as well as in other relevant stakeholder organizations.

This report concerns the first training session on Risk Analysis and Risk-based surveillance which was proposed by CIRAD in Cairo between the 22nd and the 26th of March 2009.

2. Objectives and educational approach

The course objective was to give participants the necessary knowledge and understanding of risk analysis in order for them to understand and conduct risk analysis studies using the latest methods. Applications were mostly related to emergent animal and economically important diseases like Highly Pathogenic Avian Influenza, Rift Valley Fever and Peste des Petits Ruminants. Participants should now master the vocabulary of risk analysis and understand the main concepts that are needed to explain the different steps in risk analysis and the difference between qualitative and quantitative approach. They should feel comfortable implementing a qualitative method of approach and using basic concepts to generate a quantified estimation of a given risk. The course explored quantitative risk analysis and demonstrated how to use the frameworks and probability theory to build a simple quantitative model. Mathematical and statistical topics were covered including flow models, lognormal and other distributions and Monte Carlo methods.

The methodology and the program were discussed with the FAO consultant before the workshop and adapted to field constraints (see Annex I). Two researchers were involved in the lectures and in the coordination of the practical sessions.

The course balanced theoretical lectures on risk analysis with a more applied and in-depth knowledge of the modelling methods and techniques necessary for risk assessment in animal health. Several examples and hands-on exercises were studied in order for the participants to apply and adapt what they have learned. They used for that a risk analysis computer modelling environment (@RISK with Excel).

Every morning a session of question was organised between participants. This activity is based on questions asked by students on the topics studied the afternoon before. It allows controlling the acquisition of knowledge on these topics by the trainees, individuals to express his/her doubts and misunderstanding without fear (questions are kept anonymous) and subsequently trainers to focus on precise topics misunderstood or inadequately explained the day before.

3. Course of training

Participants

The workshop gathered 10 participants, 8 members of Epi Unit in GOVs, 1 from poultry department (GOVs) and one from the head of Epi-Unit in Gharbia governorate. The strong motivation of all the participants should be stressed as well as their active involvement in all proposed participatory work. The full list of participants is attached to this report (annex II)

Place of training and logistical organisation

The workshop took place within the facilities of the Hotel Pyramid, which was perfectly adapted to the contents of the workshop. One practical training was carried out in Embaba Training Center. Computers were made available to the participants during exercises on quantitative risk analysis. Student versions of the software @Risk Pro 5.5 (© Palisade Corporation) were used during computer activities and provided to the participants. The lectures and the group activities were led by Dr Agnes Waret-Szkuta and Dr Flavie Goutard.

Working groups sessions and group discussion

The first two afternoons of the training workshop were dedicated to working group activities during which participants have been led to think about:

- The importance to define precisely the risk question
- The importance to set up a precise and accurate risk pathway
- The different steps that must be implemented when carrying a Qualitative Risk Analysis
- How to carry qualitative risk estimation

Oral presentations by participants were carried out after the work organised in 3 groups. The reviews of all the group activities were made available on the CDROM summarising the course contents.

Acquired knowledge

An evaluation measured the knowledge acquired by the participants at the end of the training and gave information on the participants' perception of a problem or a given concept.

A multiple choice questionnaire (See Annex III) was used at the end of the training to measure the degree of understanding. Questions were asked in ascending order of difficulty.

The objective of the evaluation was to measure:

- the basic overall skill of the group
- to detect potential disparities in order to adapt the content of the course

Thus, it was individual and anonymous.

The mean of the final evaluation was 13 out of 20 which can be considered as a good result reflecting that most of the participants have acquired the basic knowledge delivered in risk analysis.

Evaluation of satisfaction

The last day of the workshop, each participant was asked to make his/her remarks about the training proposed and to quantify his/her degree of satisfaction about the contents and the method used (See training evaluation form in Annex IV). The assessment is on the whole positive. The total satisfaction rate is 85%. The way the course was organised and the practicals were the most appreciated by the participants who emphasized the need of using real field data to do the practical exercises. The parts related to probability distributions and quantitative risk assessment were found the most difficult to understand. All the participants suggested that the course should have been scheduled on a longer period in order to decrease the number of training hours per day and to have more time to study practical cases and especially quantitative examples.



Teaching material

The set of teaching materials used by the trainers was compiled in a CD-ROM given to each participant. This CD included:

- all the presentations made during the training
- outputs of the groups discussions

- technical documents related to HPAI (diagnosis, surveillance and control, risk analysis, public health issues, wildlife...)
- scientific papers

4. Conclusion and recommendations

The main objectives of the training session were achieved:

- Participants understood basic concepts of risk analysis and methods to implement qualitative risk analysis.
- Most of the participants did feel enough confident to be part of a group of expert to carry out a qualitative risk analysis.
- An introduction was given in quantitative risk assessment and on the use of @Risk.
- Participants understood how to apply risk assessment methodology in order to implement risk-based surveillance and had a critical review of the surveillance protocol used in Egypt.

Since, the background level of the participants in the field of risk analysis was very heterogeneous, the duration of the course could have been extended to 2 weeks time. In the future, 5 days could be spent on qualitative aspect, with more examples on existing risk assessment and more time for the communication and management aspect. The last week could be dedicated to the quantitative risk analysis, allowing more time for practical exercises on the use of @Risk.

The knowledge in epidemiology among participants appearing to be very heterogeneous, it could be valuable for some participants to deepen their knowledge in classical methods and parameters used in the discipline. Promoting the study of RANEMA, tool which has been included in the CD left by the experts, should be encouraged.

Further training sessions may include considering two separate groups, the second group being more advanced and following solely the second week of training building on what would have been seen the first week.

If the risk assessment method may help improving a surveillance system, identification of risk factors or risk points among a network of similar nodes should not use this approach in first intention. As these problems were raised through questions by the participants, particular attention should be focused on a possible training in statistics including general and mixed linear models.

The difficulty observed during the session related to deeper concepts in quantitative risk assessment could also be related to gaps in statistical training.

A subset of data available for analysis should be passed on to the expert coming for GIS training so he can adapt to the need of the trainees that would subsequently work on their own data during practical and clearly see the application in the work they are trying to achieve.

Acknowledgements

We thank FAO-Egypt for funding this workshop, especially Dr Jobre Yilma and Dr Toni Ettl for the excellent working conditions, and Dr Ahmed Saad for his time spent to arrange all the logistics of the workshop.

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Annex I: Programme

	Sunday, March 22 nd	Monday, March 23 rd	Tuesday, March 24 th	Wednesday, March 25 th	Thursday, March 26 th
09:00-10:00	Introduction FAO / CIRAD	Question time	Question time	Question time	Question time
09:30-10:00	Program of the Week	Practical: Qualitative risk Assessment (2)	Probability concepts <i>Dr Waret</i>	@Risk	Principles of Animal diseases Surveillance <i>Dr Goutard</i>
10:00-11:00	Participants presentation Expectation Round table about RA		Applied exercises	Quantitative Risk Assessment: Probabilities distribution <i>Dr Waret</i>	Scenario Tree <i>Dr Goutard</i>
11:00-11:30	<i>Tea break</i>				
11:30-13:00	Introduction to Qualitative Risk Analysis <i>Dr Waret</i>	Practical: Restitution and discussion	Quantitative Risk Assessment: Basic principles <i>Dr Goutard</i>	Probabilities distribution : applied exercise	Risk Based Surveillance <i>Dr Goutard</i>
					Ex: QRA Ethiopia
13:00-14:00	<i>Lunch</i>				
14:00-15:30	Introduction to Qualitative Risk Assessment <i>Dr Goutard</i>	Practical : Risk Question and Pathway for H5N1 in Egypt	Deterministic exercises	Expert Opinion and importance of data <i>Dr Goutard</i>	QCM
					Training Evaluation
					Closing
15:30-16:00	<i>Tea break</i>				
16:00-17:00	Practical: Qualitative risk Assessment (1) - Group 1: RVF - Group 2: PPR - Group 3: HPAI	Practical : Risk Question and Pathway for H5N1 in Egypt		Risk communication and presentation of results <i>Dr Waret</i>	

ANNEX II: PARTICIPANTS**FAO TRAINING WORKSHOP ON Risk analysis and risk based-surveillance,
IN COLLABORATION WITH CIRAD AND DIRECTORATE GENERAL OF LIVESTOCK SERVICES, CAIRO, 22-26 March 2009**

NO	Name	Fonction	Work station	TEL/FAX	E-MAIL
1	Dr Mohamed Ahmed Salem	Veterinarian	Govs Epi Unit	168811401 233362159	HCC2712001@gmail.com
2	Dr Rasha Ali Elshabaly	Head of Epi Department	Directorate	125875057 403334424	elshabaly.rasha@gmail.com
3	Dr Elsa Negro Calduch	Assistant professional officer	FAO		elsa.negrocalduch@fao.org
4	Dr Tanek Zakaria Abdelkader	Veterinarian	Govs Epi Unit	106070249	drtarekzakaria@gmail.com
5	Ahmed Hany Mohamed	Epidemiologist	Govs Epi Unit	127400627 233362159	- drvet81@gmail.com
6	Dr Heba Ahmed Hosni Selem	Veterinarian	Govs Epi Unit	123249591 233362159	hebaahmed07@gmail.com
7	Dr Heba Sobby Ebrahim	Veterinarian	Govs Epi Unit	112316580 233362159	heba.risha4@gmail.com
8	Dr Amaal Ibrahim Attya	Veterinarian	Govs Epi Unit	125310825 233362159	amaalvet3@yahoo.com -
9	Dr Nashisa Sulah Eldin Ahmed	Veterinarian	Govs Epi Unit	188741110 233362159	nashwasalah80@gmail.com
10	Dr Emar Abd Elraof Taha	Veterinarian	Govs Epi Unit Poultry department	101285384 233362159	monmon_y2008@yahoo.com
11	Dr Yara Mahmoud	Veterinarian	Govs Epi Unit Poultry department	118653062 233362159	dr.yara.vet@gmail.com

Annex III : MCQ

Give the 4 components of a risk assessment

-
-
-
-

When conducting risk analysis:

- It is advisable to always conduct a quantitative assessment of the risk
- It is advisable to always conduct a qualitative assessment before considering a quantitative one
- It is advisable to always conduct both, qualitative and quantitative risk assessments

Please arrange the following steps of a qualitative risk assessment in the appropriate sequence or order (from the first step to the last one):

- Outline of causal pathways
- Collection of relevant information on probability of events
- Definition of hazard of interest
- Assessment of the risk

What is the difference between risk analysis and risk assessment

If you have 2 independent and compatible events A and B:

- $P(A \cap B) =$
- $P(A \cup B) =$
- $P(A/B) =$

A stochastic approach risk assessment:

- The output is a single value
- Uses probability distributions to describe variables
- Is also called deterministic
- Single (point) values are assigned to each variables

Variability/uncertainty. What is the difference between variability and uncertainty?

In a load of N cattle, if P is the probability of having any infected animal imported what is the probability to have at least one animal infected imported (R):

- $R = 1 - (1 - P^N)$
- $R = P^N$
- $R = 1 - P$
- $R = 1 - (1 - P)^N$

Risk-based surveillance is adapted to :

- Measure frequency of disease
- Increase the chance of detection of disease
- Describe the pattern of the disease

If a case-definition of a suspect case is very sensitive:

- The risk of underestimation of the disease under surveillance increases
- The risk of underestimation of the disease under surveillance decreases
- There is no effect on the detection of the disease under surveillance

Annex VI : Evaluation

Please, cross the answer the most appropriate in your opinion

1. Presentations

Introduction to Qualitative Risk Analysis

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
------------------------------------	-------------------------------	----------------------------------	------------------------------	-----------------------------------

Introduction to Qualitative Risk Assessment

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
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Probability concepts

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
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Quantitative Risk Assessment: Basic principles

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
------------------------------------	-------------------------------	----------------------------------	------------------------------	-----------------------------------

Quantitative Risk Assessment: Probability distributions

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> Average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
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Expert opinion and importance of data

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> Average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
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Risk communication and presentation of results

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> Average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
------------------------------------	-------------------------------	----------------------------------	------------------------------	-----------------------------------

Principles of animal diseases surveillance

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> Average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
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Risk based surveillance

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> Average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
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2. Practical

Qualitative risk assessment of introduction of RVFv, PPRv or H5N1 HPAI

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
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Possible risk questions and related pathways for H5N1 in Egypt

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
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Exercises related to quantitative risk assessment

<input type="checkbox"/> very good	<input type="checkbox"/> good	<input type="checkbox"/> average	<input type="checkbox"/> bad	<input type="checkbox"/> very bad
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What did you like most in the training course?

Structuration of the course (4)
Practicals (3)
Interaction with trainers (2)
Risk-based surveillance
Use of software
Qualitative Risk Assessment

Is there something you did not like at all?

Not enough time (4)
Lack of real data from Egypt to be used
(2)
Not enough practical examples
Not enough time for questions
Biostatistics

What was the most difficult to understand during this training?

Probability distribution (6)
Quantitative RA (2)
Probabilities (2)
Software
To be able to applied the method

What are your suggestions to improve this training? Which subject would you like to seen in the upcoming trainings?

More time allocated (6)
More practical in Qltve & Qttve RA (4)
Use of real data (4)
More practical in the Qttve RA (2)
More time on computer software