Evaluation of the surveillance systems: application to the surveillance of AI in Vietnam and Mali

Stéphanie Desvaux, Muriel Figuié
Sophie Molia

Avian influenza dynamic and management

at virus, birds and humans interfaces

22-24 Novembre 2011

Cirad- Montpellier – France

cirad
LA RECHERCHE AGRONOMIQUE POUR LE DÉVELOPPEMENT

Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE
MINISTÈRE DES AFFAIRES ÉTRANGÈRES ET EUROPÉENNES

Evaluation of the surveillance systems: two approaches

- **Socio-anthropological approach:**

  Qualitative evaluation of the way the information is circulating among actors

  Application in Vietnam

- **Semi quantitative and quantitative approach:**

  Semi-quantitative evaluation of the surveillance network

  Quantitative evaluation of notification

  Application in Mali

  and SEA (OASIS method and probabilist approach) (not presented here)

cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

How socio-antropology can contribute to improve surv. systems?

Common levers of the sanitary autorities

Juridical means ⇨ reporting = legal duty

Incentive means ⇨ financial compensation

Farmer's decision to report or not

Other considerations

Socio-antropology may contribute to **understand the (dys)functioning of a surveillance system**

cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

What is possibly influencing the circulation of sanitary information within an animal health surveillance system?

Farmer's awareness

= "*educative approach*"

(Palmer et al, 2009)

= Science/risk-centered stance

Is the suspected low level of reporting in Vietnam ***still a question of awareness****?*

What are the ***components*** *of the*

The Government of the S.R. Viet Nam | World Health Organization | Food and Agriculture Organization | United Nations Children's Fund | United Nations Development Programme

Joint United Nations Programme to Fight Highly Pathogenic Avian Influenza (HPAI)

Will ***reporting a suspect case*** *of HPAI* ***honor****, a* ***ring farmers*** ***vior?***

g *= tool to des*

se) is perceived,

74,

farmers trust

general HPAI control policies?

ibility

(Wynne, 1992, 1996, 2006

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

The study

See: Desvaux and Figuié, 2011. Formal and informal surveillance systems: how to build bridges? ICAHS proceeding .

cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

An active informal surveillance system does exist

- Sanitary information circulating among farmers, neighbours and traders
- Effect of the HPAI crisis on that circulation
- **Reactions** of farmers when disease reported within the ***farmers' epidemiological territory*** (500m to 3km)
- Information considered more useful than information disseminated by official channels (commune vets, loudspeakers)

cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

Farmer's risk framing depends on the epidemiological context

Farmer's frame of the risk related to H5N1

Commune B	Commune A
H5N1 = sporadic event, a threat emerging disease	H5N1 = now part of the routine. endemic disease
Zoonotic and epizootic risk	Epizootic risk only
Farmers feel helpless, look for assistance throught the formal system	Farmers have a high level of perceived self-efficacy and do not see need to contact official vet
Fear the direct consequences of the disease	Fear the indirect consequences of the disease (ban of transport)

cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

No common object under surveillance

- **Case definition**
  - very variable
  - built on experience of first outbreaks (before vaccination)
  - very cautious attitude of the commune vets
  - Alert for commune A: when it is out of control

Village vet B «When I am sure of the diagnosis, I inform, because we should not talk nonsense »

Village vet A « If we loose 60% of the poultry population in the village within 3-4 months, we do not report to the district, this is not a serious epidemic»

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

No efficient incentives to report to the formal surv. system

- **Legal**,
- **Economical** (compensation policy)
- or **social/political incentives** to report **to formal system**

  = not effective in commune A

  Farmer 6 « it does not change anything to report to the commune vet or not. If we report, we do not have compensation, so farmers prefer to sell to get some money »
- « Technical incentive » to report for commune B

cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

Social incentives to report to the informal system

- Social incentive to **report to other farmers (informal surv syst.)**

  = effective within farmer's neighbourhood

Farmer 5 « I prefer to inform the other farmers than the commune vet, for the common interest and for them to avoid losses, we should not be selfish »

Farmer 8 *« Critics from neighbors would be inevitable in case of culling if I would report to the commune vet in case of epidemy »*

⇨ **Social norm in commune A**= to report to other farmers but NOT to report to formal system

…But no commitment outside of the neighbourhood

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

How to build bridges?

- **Need** an ***epidemiological consensus:***

  ⇨ **Experience-based knowledge** (farmers) *versus* **central pandemic–based policy** (national authorities)

- Enhance trust into institutions:
  - Test and promote compensation policy
  - Transparency into HPAI control policy: What? How?

- Strengthen credibility and responsibility of the **actors at the interface:**
  - Stronger technical background ⇨ more useful for farmers or village vets
  - Better use of the available sanitary information ⇨ more rapid actions

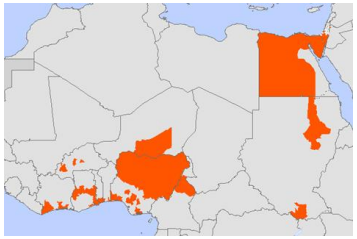
- **Accompany farmers in redefining the risk:** eg. risk of long distance transmission

- Dynamic definition of the object under surveillance:
  - **harmonization** of the **H5N1 case definition:** regular education of vets and farmers

cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

Surveillance of HPAI and ND in Mali

Context



- Mali: country at risk for HPAI
  - Outbreaks in neighboring countries
  - Migratory wild birds in inner delta of Niger river
- HPAI threat taken very seriously by Malian authorities
  - October 2005: creation of the Comité technique de lutte contre la grippe aviaire (CTC)
  - August 2008: Ministerial order creating the EPIVET-Mali network, through which HPAI and ND surveillance is conducted

→ Objective of the present study:

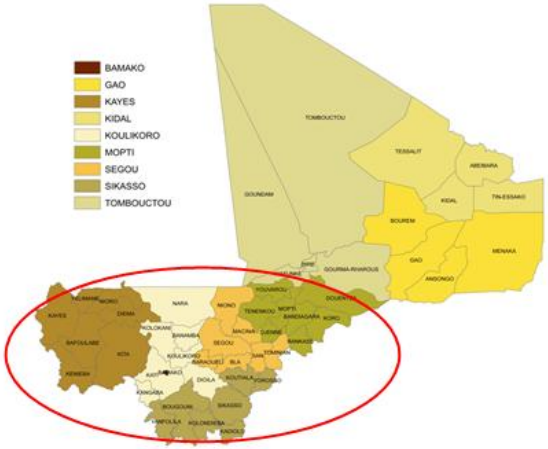
- Evaluate the organisation and functioning of EPIVET-Mali
- Evaluate the efficacy of surveillance

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

Evaluation of the EPIVET-Mali network

Method

- Design of an evaluation grid
  - Semi-quantitative method adapted from PACE (Squarzoni et al 2005)
  - 8 components, 28 criteria, 128 sub-criteria
  - Each sub-criterion conceived as a question
    - Example: % of samples arriving at the laboratory in a proper conservation state?
- Field survey
  - Conducted between May and June 2009
  - Questionnaire survey in the central unit of the network, the laboratory, 6 regional units, 41 surveillance posts and 12 border control posts



cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT

Evaluation of the EPIVET-Mali network

Method

- Scoring
  - Each subcriterion scored between 1 and 4
  - Use of scoring tables to reduce subjectivity:

Type 1 question	
Possible answer	*Score*
No	1
Almost	2.5
Yes	4

Type 2 question	
Possible answer	*Score*
Inexistent	1
Insufficient	2
Acceptable	3
Satisfactory	4

Type 3 question	
Possible answer	*Score*
≤15%	1
15< ≤30%	1.5
30< ≤45%	2
45< ≤60%	2.5
60< ≤75%	3
75< ≤90%	3.5
>90%	4

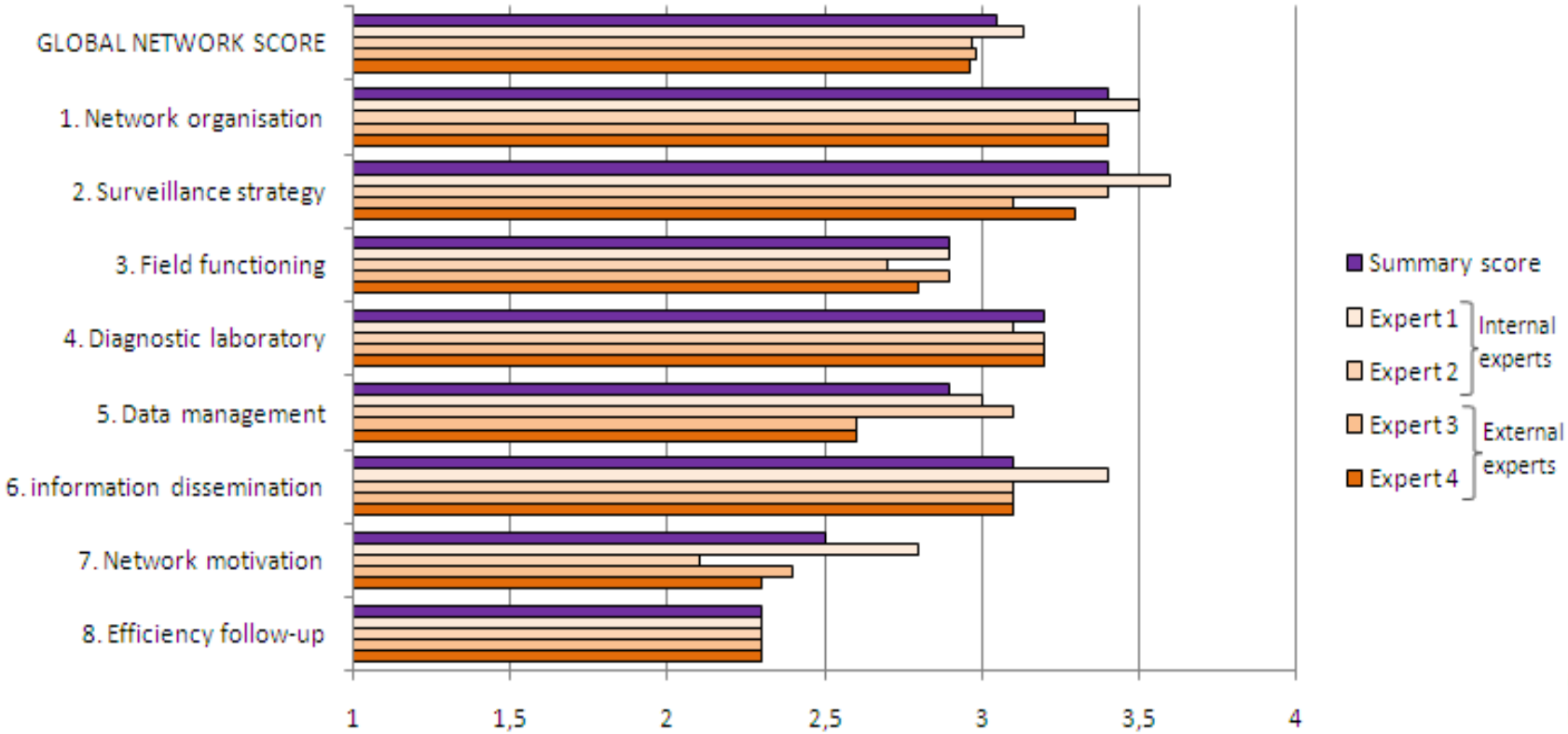
  - Scoring by 4 experts:
    - 2 internal and 2 external
    - Score calculated by taking the average of the 2 score remaining once the best and worst have been eliminated

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

Evaluation of the EPIVET-Mali network

Results

- Global score
  - 3.05 / 4: acceptable
- Score by component



Evaluation of the EPIVET-Mali network

Results

- Score by criterion

Component	Criterion	Criterion score	Component score
1. Network organisation	1.1 Network organisation well documented	4.0	3.4
	1.2 Existing and functioning steering committee	3.0	
	1.3 Existing and functioning technical coordination	3.4	
	1.4 Existing and functioning central unit	3.7	
2. Surveillance strategy	2.1 Existing legislation	4.0	3.4
	2.2 Existing and efficient surveillance plan	3.7	
	2.3 Existing and adequate funding	2.0	
3. Field functioning	3.1 Existing and functioning regional units	2.9	2.9
	3.2 Existing and functioning surveillance posts	2.8	
	3.3 Existing and functioning mobile team	3.6	
	3.4 Existing and efficient integration of partners	2.5	
4. Diagnostic laboratory	4.1 Official and formalised involvement of the laboratory	3.0	3.2
	4.2 Regular and efficient sample provision	3.1	
	4.3 Functioning diagnostic capacities	3.3	
	4.4 Existing and functioning assurance quality	3.4	
5. Data management	5.1 Existing and functioning database	2.9	2.9
	5.2 Efficient data entry	2.9	
	5.3 Efficient data analysis	2.9	
6. information dissemination	6.1 Efficient dissemination of laboratory results	3.4	3.1
	6.2 Existing and widely disseminated information bulletin	3.9	
	6.3 Efficient information dissemination by other means	2.3	
7. Network motivation	7.1 Regular field visits by the central unit	3.3	2.5
	7.2 Continued education of network members	3.0	
	7.3 Regular sensitisation campaigns	2.5	
	7.4 Incentive aids	1.0	
8. Efficiency follow-up	8.1 Existing and functioning performance indicators	2.0	2.3
	8.2 Simulation exercises	4.0	
	8.3 Audits	1.0	

Evaluation of the EPIVET-Mali network

Discussion

- Organisation/functioning acceptable
  - EPIVET-Mali benefited from the experience of the PACE
  - Projects such as SPINAP and PALCGA have enabled to make HPAI surveillance activities progress
  - Most critical point: field functioning expenses

- Question: what is the sensibility of the network???
  - EPIVET mainly based on passive surveillance
  - What is its capacity to detect events in the field?

→ How much information reaches the veterinarians/technicians of the network???

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

Evaluation of notification

Objective

- Evaluate the % of notification of avian diseases, especially diseases with signs evocative of HPAI and ND

Method

- Study zone: southern half of Mali
- Questionnaire survey in 32 randomly selected villages, 4 households per village, visited 6 times between November 2009 and February 2011
- Data collected
  - # birds, # sick, # dead, clinical signs, notification
  - If at least 3 signs present among those: mortality>50%, diarrhea, nervous signs, respiratory signs, cyanosis of the combs or wattles => considered should have been notified

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

Evaluation of notification

Results

- Insufficient notification %

	Nov 09	Feb 10	May 10	Sep 10	Nov 10	Feb 11	**Total**
# households investigated	128	128	127	110	124	121	**738**
% with avian diseases	52.3	53.1	37.0	33.6	42.7	47.1	**44.6**
% with avian diseases evocative of HPAI or ND	20.2	17.1	5.1	15.9	5.9	8.7	**12.2**
% of notification for households with avian disease	10.6	5.9	20.0	8.8	23.5	14.5	**13.5**
% of notification for households with avian disease evocative of HPAI or ND	20.0	0.0	33.3	11.8	57.1	20.0	**17.4**

cirad AGRICULTURAL RESEARCH FOR DEVELOPMENT

General conclusion

- Interesting to combine different methods and tools to better capture the complexity of the system of actors/activities/rationale involved in surveillance

- HPAI surveillance systems are suffering from lassitude
  - HPAI is becoming part of the routine in endemic area
  - Poultry owners have a contrasting attitudes towards disease

- Informal information networks exist
  - Need to build on them to improve surveillance
  - Socio-anthropological approaches enable to understand farmers' rationale and adapt surveillance to it

cirad
AGRICULTURAL RESEARCH FOR DEVELOPMENT