



# GUIDE FOR THE PREVENTION AND CONTROL OF AVIAN FLU IN SMALL SCALE POULTRY



# **GUIDE FOR THE PREVENTION AND CONTROL OF AVIAN FLU IN SMALL SCALE POULTRY**

REGIONAL OFFICE FOR LATIN AMERICA AND THE CARIBBEAN



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*The Latin America and Caribbean countries are one of the main worldwide poultry smallholders such as: chickens, fowls, ducks, geese and other. Brazil is the main producer of chicken followed by Mexico, Argentina and Colombia. They have the most high-tech production systems, and also thousands of small poultry producers and owners of birds which contribute significantly to the food security of the people. The products of these animals are the most requested and consumed in the region. In 2004 the gross value of poultry products correspond to 23.5 thousand million American dollars.*

*The Avian Flu is a disease caused by a virus that spreads easily between birds. It usually presents itself is presented usually as an epidemic and transboundary disease that could affect human beings. The H5N1 avian flu virus is now circulating in Asia and Europe and it corresponds to the Highly Pathogenic Avian Influenza (HPAI) virus, able to cause a 100% mortality in birds and more than 50% mortality in human beings. In the American Continent, the H5N1 virus is not present at the moment. However, in recent years outbreaks of other variations of the HPAI virus have occurred in Canada, Chile, El Salvador, United States, Guatemala and Mexico, which were successfully controlled and eradicated.*

*One of the measures to prevent and control the Avian Flu is diffusing the characteristics of the disease, in order to allow poultry smallholders, livestock experts and veterinaries to recognize the disease and immediately inform the local veterinary authorities. In consequence, the Food and Agriculture Organization of the United Nations, FAO, has prepared the "Guide for Prevention and Control of Avian Flu in small scale poultry in Latin America and the Caribbean". This publication should be widely distributed among the FAO country members in the Region and also to the Latin America Poultry Producers Association (ALA). It would be useful to early detect the Avian Flu and other similar diseases, to improve the biosecurity measures in small scale poultry farms, and also, to contribute to reduce the contact between wild and domestic birds in order to improve the prevention levels.*



*This Guide is based on a similar publication elaborated by FAO and The Agronomists and Veterinaries Without Frontiers (AVSF - CICDA), using a previous experience regarding the implementation of the prevention and control HPAI activities in the Asian countries. This Guide was adapted to the Latin America and The Caribbean situation and to its poultry production with the technical assistance of the following specialists: Dr. Juan García García, Dr. Miguel Angel Marquez, Dr. Ariel Antonio Mendes, Dr. Isidro Molfese (ALA), Dr. Luis Alberto Espinoza (OIRSA) and Dr. Moises Vargas-Terán (FAO).*

*FAO would like to thank all the contributions and expects this Guide be useful in the prevention and control of the Avian Flu in Latin America and the Caribbean.*

**Joseph Domenech**

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*GUIDE FOR THE PREVENTION AND CONTROL OF AVIAN FLU IN SMALL SCALE POULTRY*



- This guide has been developed to ensure that adequate information is available for poultry smallholders in Latin America and the Caribbean for them to better prevent and control Avian Flu.
- The information is specifically intended to backyard and small-scale poultry production units. The guide therefore emphasizes on simple and inexpensive measures for disease prevention and control.
- However, this guide cannot be made available to the millions of poultry smallholders in the near future. It has therefore be decided to combine in this guide both information for poultry owners and information for field veterinaries and livestock experts, since they represent the major provider of animal health service to livestock smallholders, and therefore can better spread the message.
- Ideally this guide should be distributed by the staff of the District Veterinary Office (DVO) during a meeting gathering all field veterinaries from the villages / communes of the district. This meeting should be the occasion to discuss the contents of the guide, so that when Avian Flu is suspected in the district or nearby, both veterinaries and DVO have already discussed the issues.







*Avian Flu is a dangerous disease since it can kill all poultry on a farm*

*Avian Flu is a dangerous disease since it can spread rapidly to other farms and to the whole country*

*Avian Flu is dangerous since some types of Avian Flu can make humans sick and even die.*



■ **Cause and virulence:**

Avian Flu is a disease caused by a virus. This disease can present different forms:

- Severe and generalized clinical signs = Highly Pathogenic (HPAI)
- Mild and respiratory clinical signs = Low Pathogenic (LPAI)
- No clinical signs.

■ **Affected species and natural hosts:**

- Chickens, ducks, geese, turkeys, guinea fowl, quail, pheasants, pigeons, "song birds" and numerous wild birds may all be affected by these viruses. Depending on the virus or on the host, they will show clinical signs or not.





### ■ How can Avian Flu affect a flock?

The virus may enter in a poultry farm through various ways:

- Purchase or gift of one or more domestic birds, even if not sick.
- Human beings (family members or relatives, staff, veterinaries and livestock experts, middlemen, people who deliver animal feed, etc.) coming to the farm after having been on a farm, in a live bird market, at a slaughterhouse, in a laboratory, etc. that was infected or contaminated. They may carry the virus on their clothes, shoes, boots, vehicles (wheels of the motorbike, for example), on the egg crates, etc.
- Purchase or gift of other animals (pig, for example) coming from a farm with infected poultry.
- Dogs bringing dead birds from an infected farm.
- Wild birds during their migration from one area to another. They may contaminate the farm through close contact with domestic birds or through their infected faeces dropped on the ground or in water ponds.
- Ducks going and coming back from rice fields.
- Any domestic poultry that must find its own food outside the farm.

- Contact with water ponds.
- Vaccines not well elaborated
- Contact with infected manure.



Main risks of transmission by contamination with manure and secretions containing virus

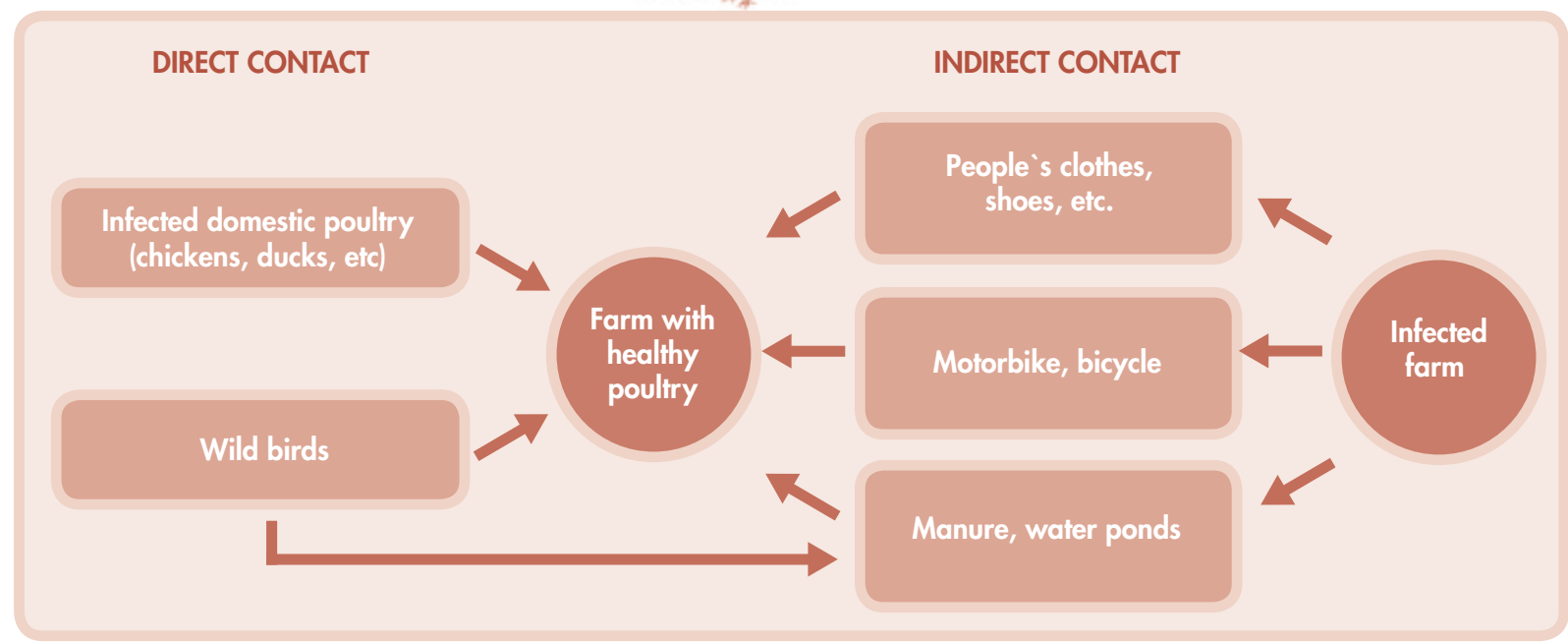


Figure 1. Possible direct and indirect contacts between infected and non-infected poultry that can bring Avian Flu into a Farm with healthy poultry



### ■ Incubation Period:

- It takes usually 2 to 5 days between the contamination by the virus and the start of the clinical signs.

### ■ Clinical signs:

*Avian Flu is very similar to Newcastle disease.*

*You must suspect Avian Flu when you see important & rapid death in poultry!*



- The clinical signs are very variable and influenced by factors such as the type of the infecting virus, the poultry species affected, their age, the other diseases that may be present and the environment.
- The disease appears suddenly in a flock, and many birds die:
  - Either very quickly with no apparent symptoms of illness.
  - Or with minimal signs of depression, little food intake, ruffled feathers and fever.
  - Some birds show weakness and a staggering gait.
  - **Sick birds often sit or stand in a semi-comatose state ("sleepy") with their heads touching the ground.**
- Some animals, especially younger birds may show neurological signs.
- Hens may at first lay soft-shelled eggs, but soon stop laying.
- Combs and wattles are dark red to blue and swollen and may have pinpoint haemorrhages at their tips.
- Profuse watery diarrhoea is frequently present, and birds are excessively thirsty.
- Respiration may be fast and laboured.
- Haemorrhages may occur on unfeathered areas of skin, especially the shanks of the legs.



- The mortality rate varies from 50% to 100%: at least half of the poultry die.
  - In turkeys, the disease is similar to that seen in layers, but it lasts 2 or 3 days longer. Occasionally, eyelids and sinuses are swollen.
  - In domestic ducks and geese, signs of depression, little food intake and diarrhoea are similar to those in layers, though frequently associated with swollen sinuses.
  - Ducks infected with Avian Flu and excreting the virus may not show any clinical signs or lesions.
- **Pathology:**
- In birds that die very quickly due to the disease, only minimal gross lesions can be seen:
    - Dehydration, congestion of internal organs and muscles.
  - In birds that die less quickly:
    - Pinpoint haemorrhages are seen throughout the body, particularly in the larynx, trachea, in and around the heart, etc.
  - Extensive subcutaneous oedema, particularly around the head and hocks.
  - The carcass may be dehydrated.



- Yellow or grey necrotic foci may be present in the spleen, liver, kidneys and lungs.
  - The air sac may contain exudates or appears trichened.
  - The spleen may be enlarged, dark and hemorrhagic.
- **Differential Diagnosis:**
- Highly Pathogenic Avian Influenza may be difficult to distinguish from:
- Other diseases that cause sudden high mortality:
    - Virulent Newcastle disease;
    - Duck Plague;
    - Acute Poisonings;



- Other diseases that cause swelling of the combs and wattles: Acute fowl cholera and other septicaemia diseases; Bacterial infection of the comb and wattles.

Avian Flu should be suspected in any disease outbreak in poultry that persists despite the application of preventive and therapeutic measures for other diseases.

#### ■ **Laboratory diagnosis:**

Avian Flu is difficult to differentiate from other diseases without the laboratory tests, but the field veterinary or livestock expert should not wait for the test results before implementing some control measures (explained further in this manual). The techniques for collecting specimens are not presented in this manual. Only veterinarians who have received adequate training on these techniques can do this collection of specimens. They normally take samples from sick animals but also from healthy animals. They have to sample at least 15 animals per farm.

#### ■ **Treatment**

There is no treatment for Avian Flu.

#### ■ **Vaccination**

Vaccines against Avian Flu exist and are being further developed. The decision to make these vaccines available in a country can only be taken by the Central Veterinary Services. However, vaccination is only one method for

prevention and control, and other methods and principles (for instance, the ones described in this guide) still have to be applied even when vaccines are available and used.

#### ■ **Zoonosis**

Avian Flu is a zoonosis: human beings may be affected and die if in contact with certain types of the virus.



*It is a way to avoid contact between animals and microbes*

- Biosecurity is common sense.
- Biosecurity may not cost too much money, it is mainly good practices to use in your farm.
- Principles of biosecurity can be applied in both large-scale animal production units and backyard or small-scale animal production units.
- For small-scale poultry production, biosecurity consists on various, simple, sometimes zero-cost measures that will:
  - Keep microbes away from poultry.
  - Keep poultry away from microbes.
- If biosecurity measures are not followed, we spend more time and more money in trying to solve the disease when it does appear.
- **The principles of biosecurity may however be difficult to follow in cases like ducks scavenging in paddy fields. If you cannot apply biosecurity in these cases, you should make sure that these animals are kept separated from other poultry.**
- Different measures of biosecurity can be applied in different

circumstances. For example, if there are outbreaks of avian flu close to your farm, you must take stronger measures than in normal times. You can look at the following pages for details about the biosecurity measures to be taken according to the disease situation in your area.

- Do not forget that biosecurity will help to protect your farm against every disease, not only avian flu.





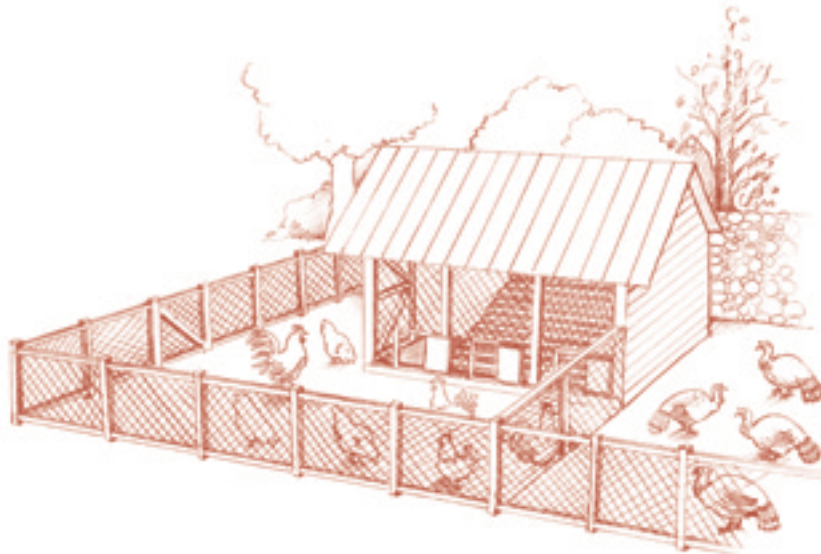


## WHAT TO DO TO PROTECT A FARM WHEN THERE IS NO OUTBREAK IN THE PROVINCE OR IN THE COUNTRY?



- With Avian Flu, there is almost never a time when the risk of getting the disease is zero. Even if you have not heard of outbreaks being reported in the province or in the country, there is still a risk of getting the disease. This is a low to medium risk situation.
- Keep the poultry in good condition. When you hear about an Avian Flu outbreak being reported in the neighbouring province, it does not mean that some farms close to yours or even that your farm is not yet infected. Poultry and human beings may have travelled from the infected area to your area before the disease was observed and the outbreak reported.

*Always consider that Avian Flu may come!*



- By following some basic principles, a farm will remain free of disease. These principles are:

**A** *Keep the poultry in good condition*

**B** *Keep the poultry in a protected environment*

**C** *Control the entries on to your farm*

*Rely on yourself to keep your farm free of disease!*





## PRINCIPLE

1

**Keep the poultry in good condition**

- An animal in good condition has a better resistance to diseases. Poultry in good conditions:
  - Have good access to clean water and adequate food.
  - Have access to an adequate housing.
  - Receive de-worming products and vaccination
- If your poultry is not in good condition:
  - They are more likely to catch diseases.
  - They produce fewer eggs, less meat, therefore: less food or less income for your family

## PRINCIPLE

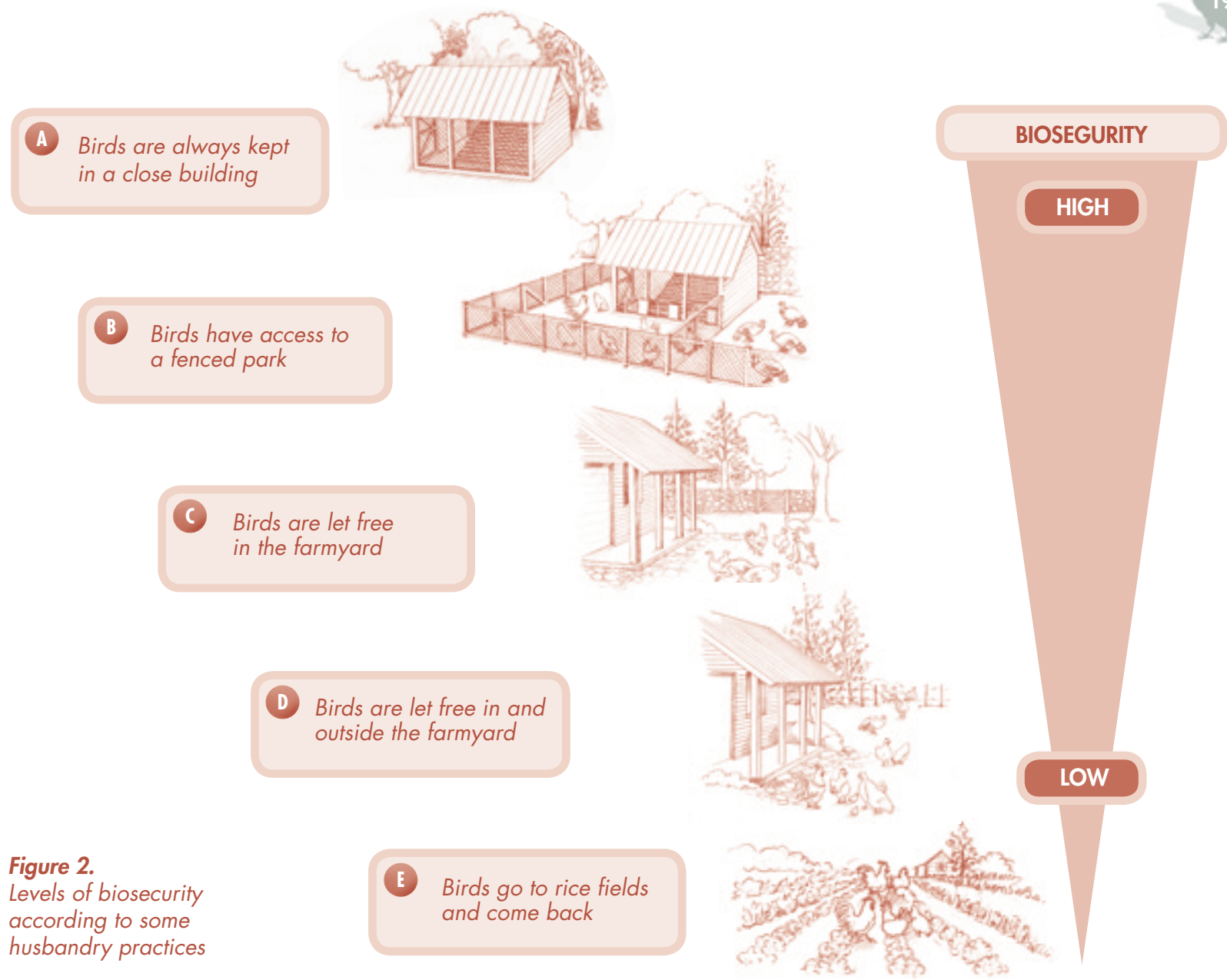
2

**Keep the poultry in a protected environment**

- Ideally, poultry should be kept in a protected place. But in small-scale production, this is sometimes impractical. In the below figure, some situations are described and ranged according to the level of biosecurity they provide.

**■ What is the best system?**

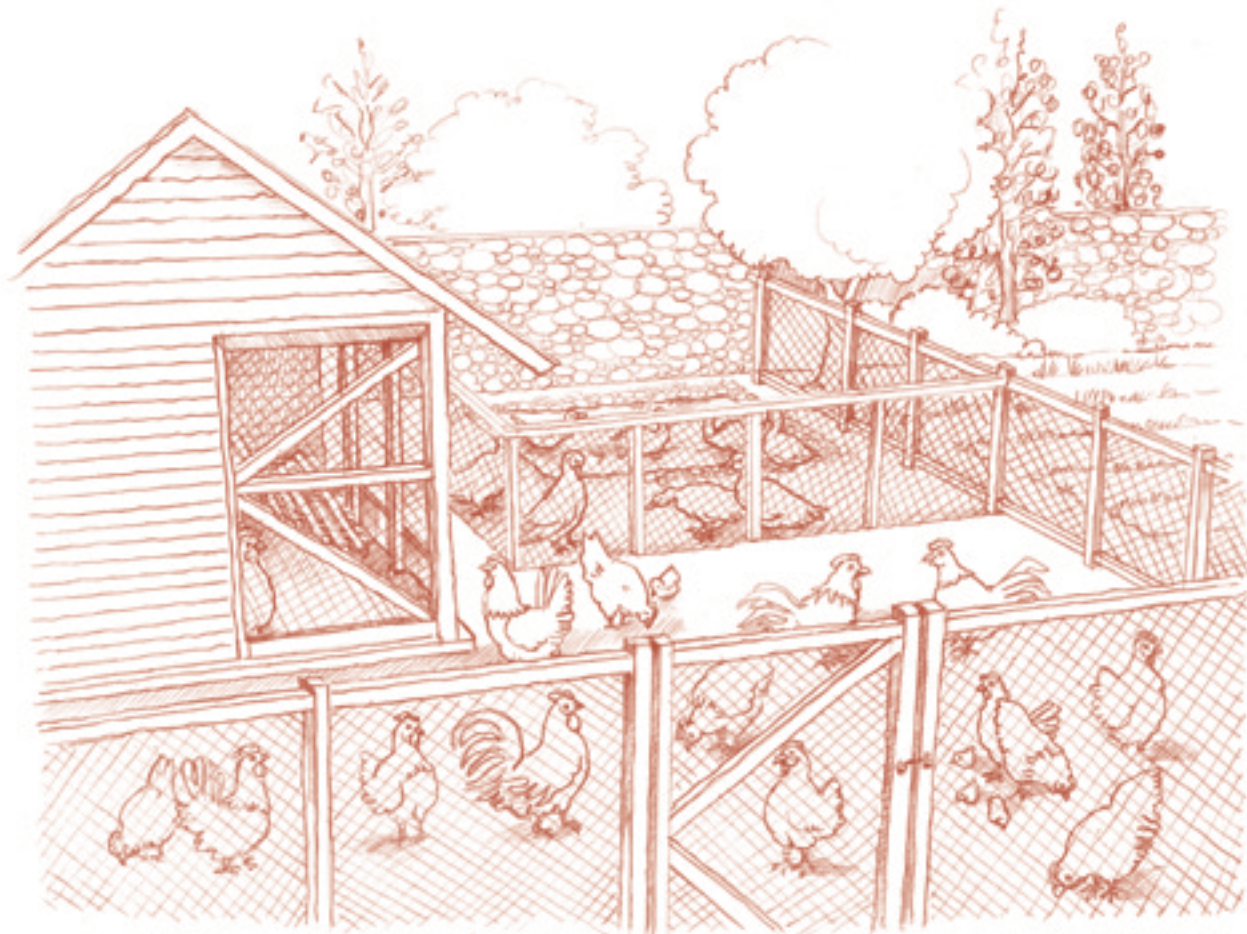
Situation A is much better for the protection of your birds than Situation E, because the contacts between the poultry and infected animals or contaminated places are less likely if poultry are kept in a closed building than if they are running in paddy fields.



**Figure 2.** Levels of biosecurity according to some husbandry practices



- Letting ducks scavenge in paddy fields is an easy way of getting income without too much inputs BUT it is also a risky behaviour. It is better to have a pond, with fences.
- A closed building for the night and a fenced park (with a pond if necessary) for the day is a practical solution.

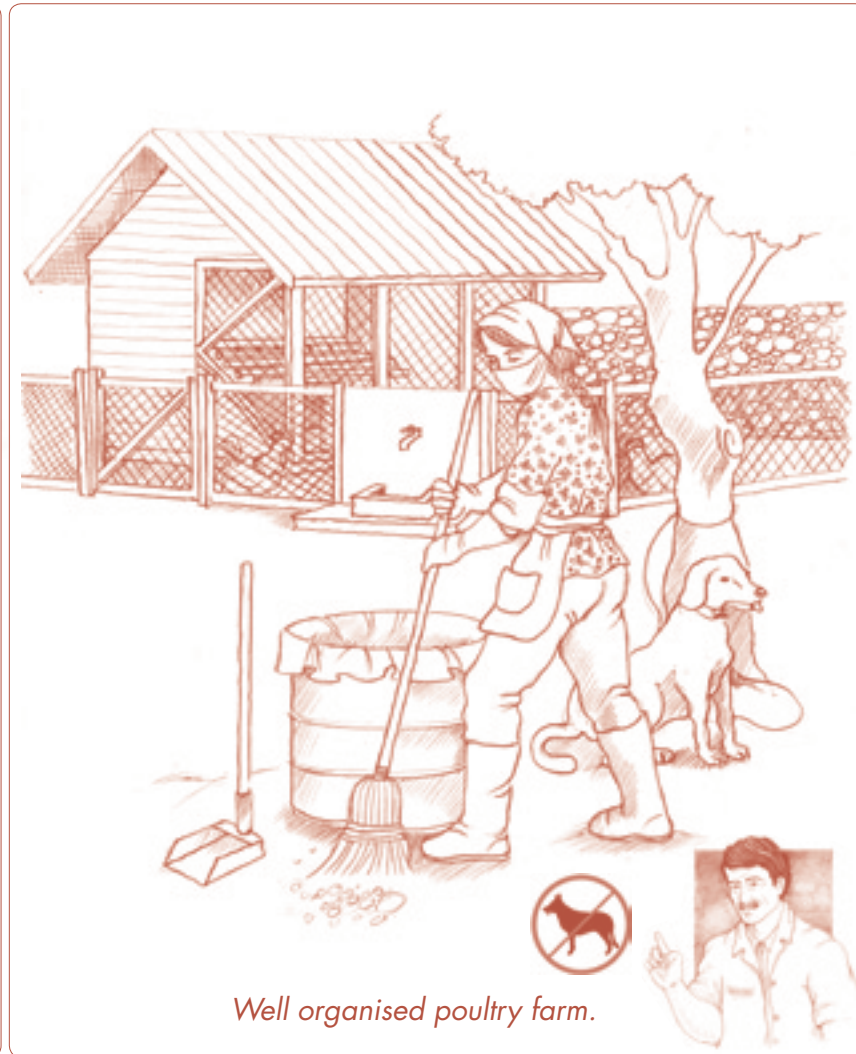


**Figure 3.** Ducks kept within fences

- If your poultry are allowed to go in the farmyard, keep the ground clean.
- When you see one or more birds that appear to be sick, take these birds out of the flock and place them in a closed cage. They must not be in contact with other animals.
- When you observe or take care of your poultry, always start by the healthy flock and then go to the sick flock.



**Figure 4.**  
*Separation of sick poultry away  
from the rest of the flock.*



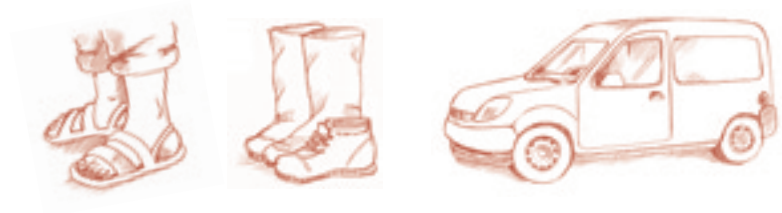
**Figure 5**

## PRINCIPLE

3

**Control the entries on to your farm****What are the entries to control?**

- Everyone coming from a place where there are sick poultry, can carry the virus on their clothes and their sandals:
  - Family members: coming back from neighbours, from the local market; from the paddy fields.
  - Neighbours
  - Middlemen coming to buy or to sell poultry but also pigs, cattle or other agriculture products.
  - Tools and equipment from infested farms.
  - Veterinaries and livestock experts coming to treat or vaccinate your animals. They may have just visited an infected farm.
- New chicks, ducklings, piglets bought from a middleman, from a neighbour's farm, from the market or unknown place.
- Purchase of animal feed, equipment, etc.
- Entry of motorbike, bicycle or other vehicle in the farmyard.
- Dogs or cats that bring dead animals.
- Manure purchased from another farm.







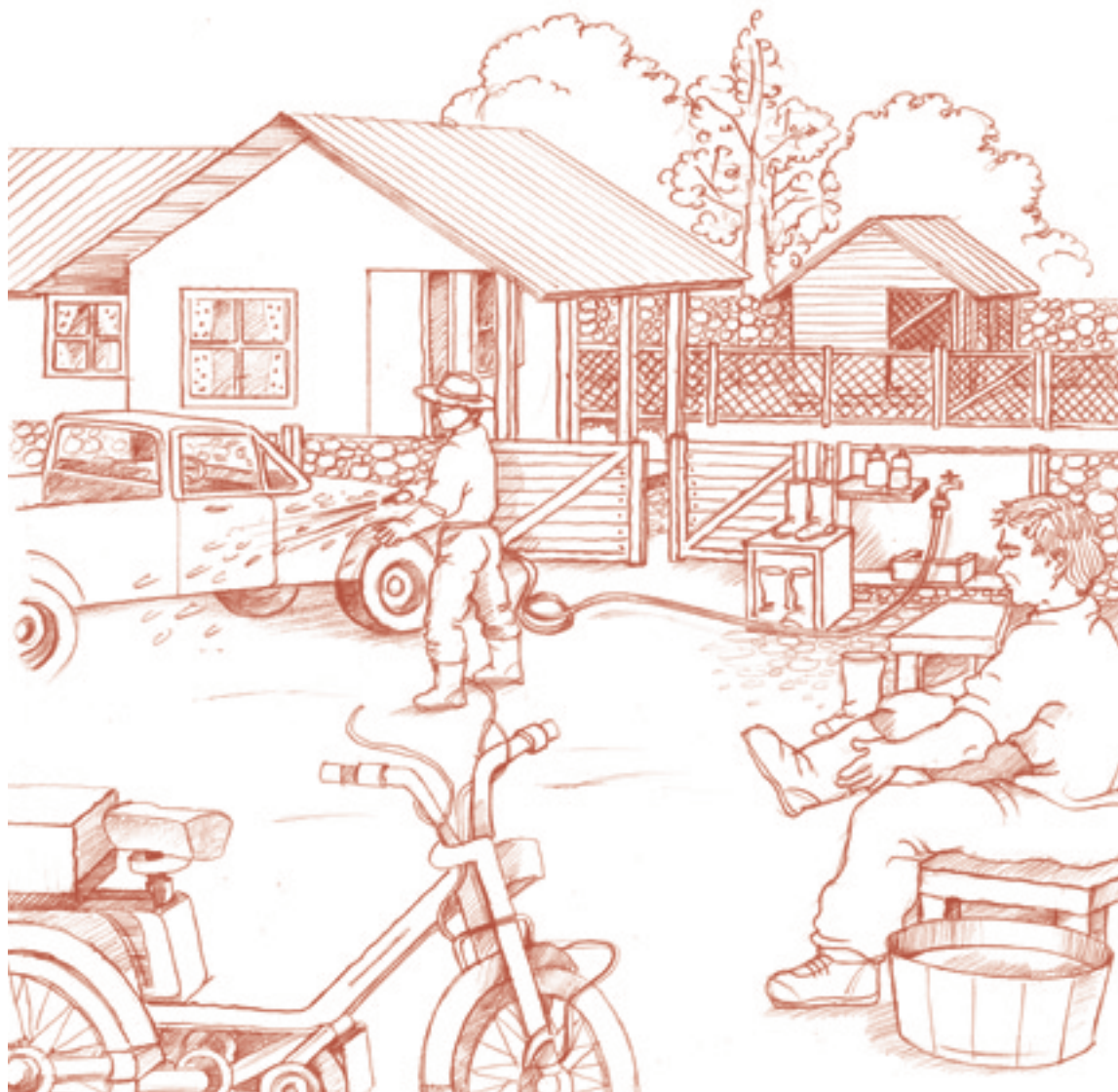
## What can you do?

*Those advices may appear difficult to apply but they are the best way to protect the animals and therefore to protect the incomes of the farmer!*

*This is a lot about changing habits. It may be difficult to change everything at the same time, but the farmer and you must try to adapt yourselves little by little.*

- Always consider that you or anyone may carry the virus! Even if the person is someone you know very well, be careful!
  - Keep the visitors away from where the poultry live or eat.
  - Ask people, especially the middleman carrying live birds, to leave their motorbike or bicycle at the farm gate.
  - Do not allow the middleman enter your farmyard. Go yourself outside to bring him your animals if he/she wants to buy them.
  - You and the farmer should wash your hands with soap before and after you take care of the animals.
  - The farmer should change his/her clothes when he/she comes back from outside, especially from another farm.
- If possible:
    - Farmers should have a bucket of water & soap at the farm gate so he/she and anyone can clean hands, the sandals, shoes, wheels of bicycle / motorbike before entering the farmyard.
    - Farmers have sandals for visitors so they can leave their sandals at the farmgate and take the farmer's sandals to come in the farmyard. If not, the farmer should ask visitors to wash and brush theirs when they are at the farm gate.
  - If the farmer takes manure from another farm, he must store it in a protected place for at least 3 weeks and spray some disinfectant on the top to kill the virus. Mix this often (every 2 or 3 days, so that any virus can get exposed to the air and die)





**Figure 6.** Good control measures for people entering the farmyard (vehicles are left outside, hands are washed, use of the farmer's sandals)



- **Quarantine:** if the farmer needs to buy some animals, he must put them in a closed and separate place with no contact with your other animals for at least 2 weeks. Because even if the new animals look healthy, no one can know if they carry the virus or not. If they do, not only they will die but all your poultry may also die.
- For poultry, you can put these new animals in a large basket, and make sure that your other poultry cannot come near the basket.



1 New animals have been bought and are brought into the farm

2 The new animals are kept in a close and separate place for at least 3 weeks, and observed everyday

3 If after at least 3 weeks, they are still healthy, they are put with the rest of the animals

**Figure 7.** Principles of Quarantine

## WHAT TO DO TO PROTECT A FARM WHEN THERE ARE OUTBREAKS REPORTED IN THE COUNTRY OR IN THE PROVINCE?



- When you hear about an Avian Flu outbreak being reported in the country or in the province, it is possible that the disease is already very close to your farm. Poultry and human beings may have travelled from the infected area to your area before the disease was observed and the outbreak known.

*This is a high risk situation!*

*Consider that Avian Flu may be next door!*



- By following some basic principles, your farm will remain free of disease. These principles are:

1

*Keep the poultry in a protected place*

2

*Do not buy or accept new animals on to the farm*

3

*Decrease and control entries from humans*

4

*Sweep the farmyard, clean the animal buildings, the equipment, the motorbike, more regularly*

5

*Store the manure*

*Rely on yourself to keep your farm free of disease!*

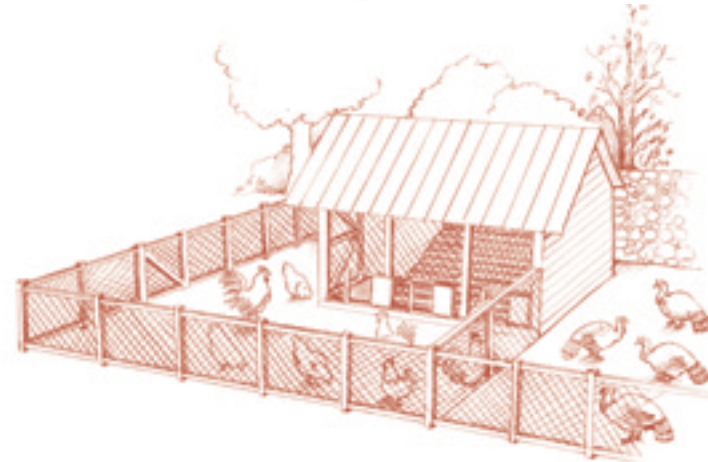


## PRINCIPLE

1

**Keep the poultry in a protected place**

- As mentioned before, in small-scale poultry production, poultry are more or less let free to walk around to get their feed themselves. When there is an outbreak nearby, allowing your poultry to be completely free, is a very risky practice.
- A closed building for the night and a fenced park (with a pond if necessary) for the day is a practical solution.
- Do not walk the ducks in the paddy fields anymore.
- Do not allow the poultry to walk freely the farmyard. Keep your poultry in a protected place: a fenced park, under the house protected with a fishing net or better, a poultry pen. Be sure that they have access to clean water and feed.
- Feed the poultry yourself (even if you may need to buy a bit of corn or other feed) rather than letting the poultry scavenge freely.



**Figure 8.** Three different types of protected places (fenced park; poultry pen; poultry kept next to the house within a fishing net)

## PRINCIPLE

2

**Do not buy or accept new animals on to the farm**

- Even if the new animals are isolated from the rest ("quarantine"), the risk of getting the virus is too high.
  - Do not introduce new animals even for a short duration.
  - Do not bring live poultry for cooking at home. If it is necessary to do it, prepare the poultry in a separate place which can be cleaned thoroughly. Burn or bury the feathers and other wastes away from the farmyard.
- Avoid taking your poultry to the market for selling and taking it back again to your farm if you do not manage to sell it all. In case you have to take back the poultry, keep it separated from the rest.
- Do not attend competition of fighting cocks.



**Figure 9.** Fighting Cocks

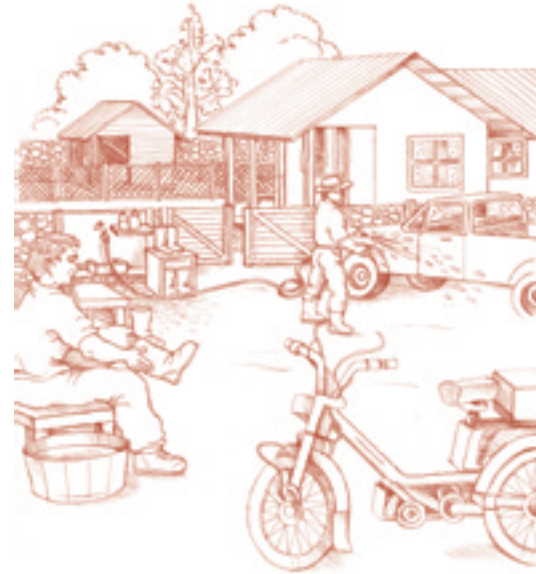


## PRINCIPLE

3

**Decrease and control entries from humans**

- Only family members should be allowed to come on to the farmyard.
- Everyone, including family members, should wash with soap, brush and disinfect their hands, shoes, sandals, wheels of motorbike / bicycle, at the farm gate before going onto the farmyard.
- Only one family member should take care of the poultry.



## PRINCIPLE

4

**Sweep the farmyard, clean the animal buildings, the equipment, the motorbike, more regularly**

- The farmyard should be swept everyday (wear a mask to do it)
- The fenced park and poultry housing should be swept and brushed every day if possible.
- Take away the faeces and the unconsumed feed. Destroy or store them in a protected place.
- Wash, brush and disinfect the small equipment more regularly.



## PRINCIPLE

5

**Store the manure**

- Viruses can stay alive in the manure for many weeks. If the manure is spread too quickly in the fields, the virus may contaminate poultry.
- Composting enables:
  - Killing bacteria and viruses.
  - Increase the quality of the manure for fertilization.
- Method:
  - Take the manure away from the poultry everyday.
  - Store the manure (away from ponds, wells, etc):
    - in a plastic bag,
    - on the ground under a plastic,
    - in a hole in the ground
  - When you have 10 kilos or more, add some water to the manure (2,5 litres for 10 kilos of manure)
  - Add some quicklime (half of kilo for 10 kilos of manure)
  - Turn twice a week for the first 2 weeks and then once a week
- The length of time required for decomposition is extremely variable from compost to compost (depending on volume, particle size, frequency of turning, moisture content, ambient air temperatures, etc).
- The compost is ready when the temperature has come down, when the colour is dark brown and when it has a humus smell.







### What to do when there is high mortality on the farm?

- In poultry production, the death of few birds can be a regular problem. Poultry may die for several reasons, including because of diseases.
- Some diseases are not so important because they will only affect a small number of animals.
- Avian Flu is different: consequences can be much severe. This means that when you observe High Mortality you should think about Avian Flu.
- For the farmer or the veterinary, it is impossible to be certain that the death of the poultry is due to Avian Flu. But they should act as if it was Avian Flu. This is why, in this chapter, we refer to “Suspect Mortality”.
- **What is suspect mortality?**
  - Sudden death of your poultry (this means that your chicken were healthy and they die suddenly in less than 24 hours)
  - and a daily mortality over 5 % of your flock during few days.

For instance, if you have 50 chickens, the first day you have 3 chickens dead, without symptoms, and the second day 3 again, and the third day 4 and so on.



**Figure 10.** Sick and dead birds.

- When you have suspect of mortality in a farm:
  - **Only the laboratory can confirm that it is or that it is not Avian Flu.**
  - **The farmer and the veterinary must act before getting the results from the laboratory. If you wait for the laboratory results, the situation will become impossible to control.**
- When you observe suspected mortality on your poultry, **the farmer and the veterinary must work together.** Their objectives must be:
  - To eliminate the virus from the infected farm as soon as possible.
  - To avoid contamination of other farms.
  - To avoid infection of human beings.
  - To report immediately to the Village & Commune leaders and to the District Veterinary Officer.
  - To write down information about the event.

#### **The farmer must inform immediately the veterinary**

- Usually, most of the small-scale poultry producers do not use the services of the veterinary to take care of the poultry. One of the reasons is because the economic value of few poultry is not high enough in comparison with the fees of the veterinary or the cost of treatment.
- However, when suspected mortality occurs, it is crucial to

inform the veterinary or the district vet. This is the law, but it is also simply in the farmers' interests. Why?

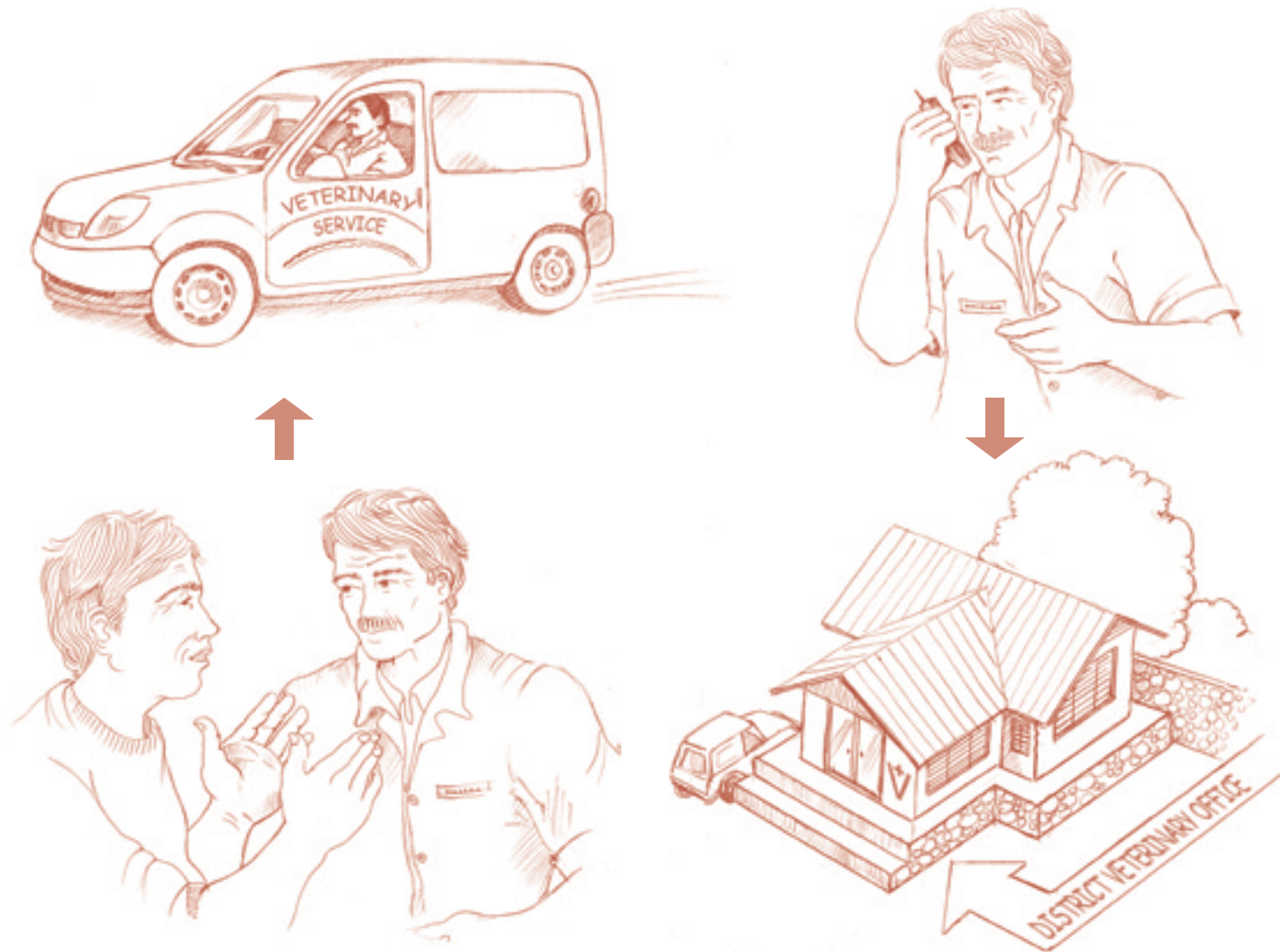
The veterinary will help eliminate the virus from the farm:

- It will be safer for the farmer and his family and will reduce the risk of the farmer and his family of getting sick.
- The farmer will be able to restart poultry raising quicker.
- It will help prevent the disease go to the neighbour's farms. If the neighbours' poultry are kept free of the disease, it may be possible for you to buy some poultry from them to restart poultry activities.
- It is possible that the farmer receives money from the State to compensate for the economic losses.

#### **The veterinary must:**

- Immediately visit the farm and give the appropriate advise to prevent the disease from spreading.
- Then inform the District Veterinary Office (DVO) as soon as possible.



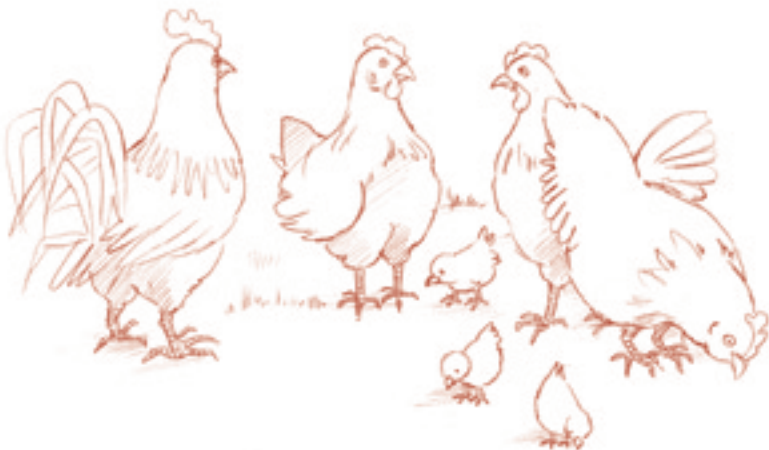


**Figure 11.** Veterinarian contacting the District Veterinary Office (telephone or visit).

- **Do not wait for laboratory results before acting.** In such a situation, laboratory results are only here to help the DVO and the veterinary take the decision to maintain / extend the control measures (if the specimens are positive for Avian Flu) or to stop them (if specimens are negative). Laboratory results are to help better understand the problem. The control measures should start immediately with the veterinary's visit. If you wait, it could be too late!
- **Do not wait for DVO staff to come before acting.**
- If the disease is confirmed to be Avian Flu, the district vet and the veterinary should ensure that the control measures are maintained or extended, according to what is decided by the DVO (advised by the National & Provincial Veterinary Services).

**Below is an example of the steps that should be followed:**

On the Sunday, at 18.00, Ms Smith feeds her 20 chickens. They all look normal.



**On Monday:**

- 7.00 5 chickens are dead and the others are weak.
- 8.00 Ms Smith washes her hands and sandals and then goes to the house of the veterinary.
- 9.00 The veterinary takes some disinfectant at his home, and he goes to the house of Ms Smith.
- 9.30 The Veterinary arrives; leaves his motorbike at the farm gate.
- 9.35 The Veterinary looks at the poultry (alive and dead). Asks some questions to Ms Smith. He learns that one week before a lot of chickens died at the next house. He thinks that it may be Avian Flu or Newcastle disease. He explains to Ms Smith what must be done.
- 10.00 Ms Smith puts the dead chickens in plastic bags. She closes the plastic bags and places them in a protected area (away from the house, from other animals, from the well). She keeps the live ones in a protected place (poultry pen or fenced park).
- 11.00 The Veterinary prepares a solution of commercial disinfectant in 1 bucket. The Veterinary goes to the farm gate, washes and brushes his hands and his sandals in the bucket, as well as the wheels of his motorbike.



*Ms Smith puts small equipments at risk in the bucket.*

*Ms Smith agrees to control the entry and exit of people and animals into her farmyard.*

*Ms Smith puts some quicklime on the poultry house, and everywhere the poultry may have walked during the last few days. She checks that all animals are kept in their pens or attached.*

- 11.30 *The Veterinary goes immediately to inform the village chief and goes to phone to the District Veterinary Office to inform them about the disease, gives them detailed information of what he has seen and what he has done. The District Vet informs him that someone will go in the afternoon to discuss and take some specimens for laboratory testing.*
- 15.00 *One staff from the DVO arrives at Ms Smith house with the veterinary. DVO and the Veterinary follow the same principles before entering the farm. DVO opens the bags, observes the dead birds, opens them (post-mortem). He takes specimens from the dead and alive birds. During these operations, DVO and others wear gloves and facemasks.*
- 16.00 *DVO asks Ms Smith the following questions: Who has entered her farm during the past 3 weeks and where they*

*have gone? What animals have been purchased during the past 3 weeks and where did they come from? What animals have left (sold or given) her farm during the last 3 weeks and where have they gone?*

- 17.00 *The DVO advises Ms Smith not to move any animal in or out the farm, to reduce the human movements in and out the farm and he advises her to cull the remaining animals before getting the laboratory results. Ms Smith agrees on the measures to take at her farm.*
- 17.30 *The DVO goes to the next house to ask the same questions and to see if there are still live animals. If so, he also take samples and advises to keep the animals in a protected place*
- 19.00 *Back at the office, the DVO staff calls the Provincial Department of Animal Health (DAHP) to inform them. Specimens are stored in the fridge of the DVO. DVO prepares a brief report to fax to DAHP and to attach to the specimens for the laboratory.*

**On Tuesday:**

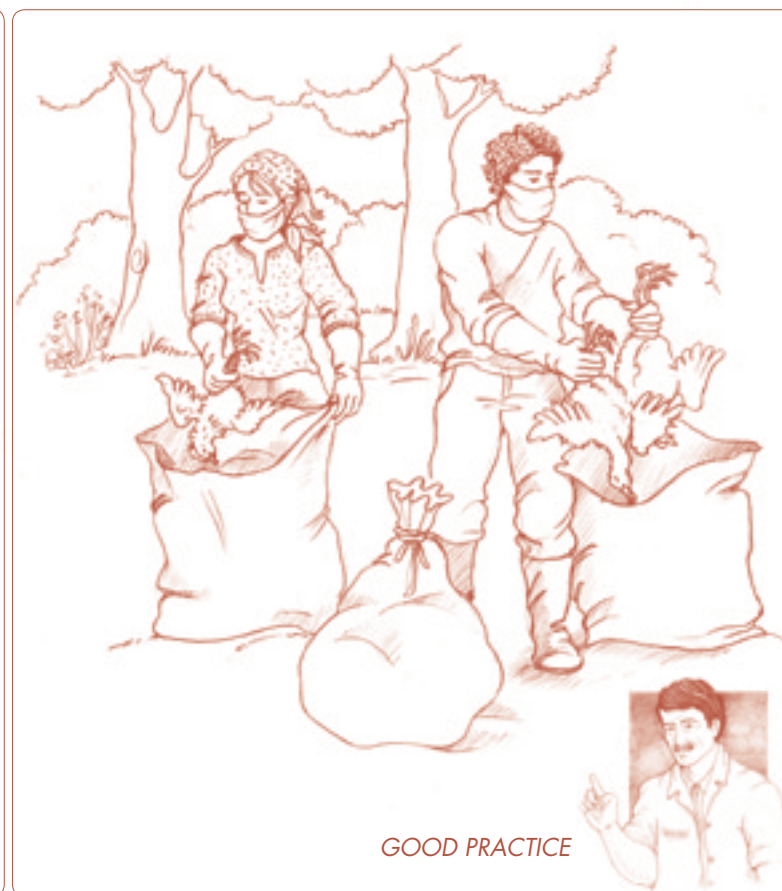
- 08.00 *The DVO puts the specimens into a taxi to send them to the local diagnosis veterinary laboratory.*

■ **What to do with dead birds and other contaminated objects?**

- Never throw the dead birds in the river.

- Never eat them.

- Dead birds should be put immediately in a bag.



**Figure 12.** Throwing dead birds in the river

**Figure 13.** Placing dead birds in a bag



- The DVO staff may come and take some specimens from these birds. After the DVO has come or after one day, these birds must be destroyed as described below.
- All dead birds and other contaminated objects (for instance: manure, eggs, blood, feathers, egg crates) must be destroyed properly as soon as possible during the day through:



### **Burning**

Place all the birds and objects in a recipient, add some petrol, and light a fire.



### **Burying**

Dig a hole (far from a well, pond, animals) in the ground, put some quicklime at the bottom and on the borders of the hole; put all the birds and objects in the hole; cover with quicklime; cover with earth.



## ■ What to do with sick birds?

- **Never eat sick birds.**
- Sick birds should be put in a **fully closed building** with no contact with any other animal. The DVO staff may come and take some specimens from these birds. After the DVO has come or after one day, these birds should be immediately culled (because when they are alive, they continue to produce some virus and anyway they will very probably die).
- **Culling:** in small-scale poultry production, there may be no other method available for culling than to do it with your hands and a knife (decapitation). It is important that people who do the culling are in good health and protect themselves (with mask, glasses, gloves, boots, etc.) from the start of the culling until they finish cleaning the area and equipment used. Blood, as well as any other waste, must be collected and destroyed (see above). The culling must be done away from natural sources of water (pond, well). The culling must induce death of the bird as quickly as possible both to avoid spreading of contaminated feathers in the environment and to limit the pain induced to the bird before death.
- **Destruction:** see above (burning or burying)

## ■ What to do with healthy birds?

- Birds that are apparently healthy can be kept alive as long as they are kept in a **fully closed building, with no contact with any other animal.**
  - The veterinary and the DVO may suggest culling these birds immediately if the risk is too high, without waiting for the lab results.
  - If the lab test is positive with Avian Flu, these birds should be culled immediately (if they are still alive), as explained above.
  - The farmer should never sell nor give these birds or the eggs even though they may look healthy!! He puts himself and other people in danger of catching the disease. He puts people's poultry in danger of catching the disease.
- ## ■ Cleaning and disinfection of premises and equipment
- The virus may be present on many objects, materials and areas that have been in contact with the infected poultry or that have been used during the observation, the culling and the destruction of the animals.
  - Plastic bags, animal feed, wooden baskets / walls, etc. can be easily burnt. Manure can be composted or buried.





Poultry building whether made with bricks or wooden must be:



- The ground where poultry walked should be cleaned (with a broom) then sprayed with disinfectants.
- Quicklime is the cheapest disinfectant and should be used for ground and poultry housing.
- **Other things**
  - Do not visit other poultry farms: you could bring the virus to them.
  - Do not lend your equipment (for instance: bicycle, egg crates) to someone else.
  - Do not sell, nor give away any animals, eggs, manure.

- When the farmer and family members leave the farm, they must wash and brush their shoes / sandals and the wheels of the bicycle / motorbike, and sprayed them with some disinfectants.





■ **Time before restocking with birds**

- After all poultry has been destroyed and after all materials, surfaces have been washed, brushed and sprayed with disinfectants, you should not bring in new animals.

- If the cleaning has been done properly, at least 21 days should go by before bringing new poultry. Most of viruses cannot survive after these 21 days in the environment if they cannot come into contact with animals.

<i>&lt; 3 weeks &gt;</i>		
<i>1st September</i>	<i>&lt; 1 week &gt;</i>	<i>22nd September</i>
<i>Cleaning, burning, disinfection.</i>	<i>2nd cleaning and disinfection</i>	<i>Bring in new animals</i>

**Figure 14.** Steps and duration before restocking with birds.





- When there are outbreaks reported in the province or in the country, everyone should be aware that they may get the virus. The avian influenza can be transmitted to human beings mainly through the faeces or by inhaling the virus that are spread by the infected birds when breathing.
- In non-infected poultry farms, only one person should take care of the poultry. This person should be an adult in good health. The pregnant women and the young children should avoid the contact with the animals.
- Don't eat animals dead of disease, because you take a risk of getting infected by the avian flu when preparing the poultry.





- Each time you have to touch your animals or their products (meat, eggs), you should wash your hands with soap afterwards.
- People should not eat raw blood.
- Veterinaries, middlemen, market sellers, people buying live birds at the market, people preparing birds for home consumption or for restaurants, etc. should protect themselves when in contact with poultry. They should at least wear masks and if possible gloves, glasses, etc. They should wash their hands with soap frequently. They should wash their clothes, shoes, and sandals at least once a day before going home.
- In infected areas, any contact with poultry or poultry products must be avoided. The only people who have to be in contact with poultry should be: farmers, veterinaries and livestock experts, and they should wear protection.
- Advice should be sought from the local nurses or doctors.
- When you or a member of your family, who was in contact with animals, especially sick birds, has fever or respiratory problems, go as soon as possible to a health centre and inform the doctor that you were working with poultry.



## VETERINARIES, LIVESTOCK EXPERTS AND DISTRICT VETERINARY OFFICE: A KEY PARTNERSHIP TO FIGHT AVIAN FLU



- Avian Flu can be best fought if **(1) outbreaks are reported early, (2) control measures are implemented early**. The fight against avian influenza requires different people to work together: farmers / veterinaries / livestock experts/ district vets / provincial vets / central department of animal health / laboratory and also doctors. The veterinary is a key person in this network so he/she must have good relationships with the farmers, must react quickly and must inform the district vet or provincial vets and the village or commune leaders.
- Good relationships between poultry farmers and the veterinaries are key since veterinaries are the only “animal health” local experts in close contact with the community. This will facilitate reporting of important diseases from farmers to veterinaries and implementation of measures advised by the veterinary.
- The veterinary and the livestock expert can help the farmer by giving good advice and by implementing control measures to protect the family and the community.
- The veterinary and the livestock expert must have good relationships to ensure early reporting and early action.
  - The livestock experts have an interest in collaborating with the district vet because they may get technical support from the district veterinary office.
  - The District Veterinary Office staff have an interest

in collaborating with the veterinaries and livestock experts because this is the only way for them to know what happens at the village level. They can also use the services of the veterinaries and livestock experts to implement control or prevention measures in the villages.

*In order to facilitate the coordination at the district level, regular meeting between the veterinaries, livestock experts (and private veterinarians) and the District Veterinary Office are very useful.*





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