5. Prevention and biosecurity

Areas that have not been affected by an HPAI outbreak or those that have undergone culling, disinfection and even vaccination should improve their biosecurity. Improved biosecurity at whatever level is cost-effective in comparison to the losses from disease, depopulation and further anguish, be it at the village level or commercial farm.

The most difficult environment in which to improve biosecurity and disease prevention is likely to be at village level, where poultry and other animals are allowed to move without any restrictions and there are no costs to animal care (feeding), but their losses due to disease or scavenging animals (dogs, cats, wildlife) are high. Under these circumstances, the role of rural developing agencies can be beneficial in promoting the advantages of keeping animals in a fenced enclosure where environmental stresses are minimised, theft less likely, animals are safer from scavenging animals, and the loss of valued animals through being run over by motorcycles, cars or lorries is eliminated.

5.1 RESTRICTED ACCESS MEANS KEEPING THE DISEASE OUT

Restricting access to a property or farm through the use of fences and enclosures creates a barrier between clean areas where the poultry are kept and the outside environment. Access to where poultry are kept should de restricted to people known by the owner, people who do not have poultry of their own, and to people who do not participate in events where birds congregate, such as cockfights. Particular attention needs to be paid to workers on poultry farms who keep backyard poultry at home – best practices would stipulate that no workers should have poultry of their own, since this is a high risk avenue for disease introduction. Wild birds – resident fowl or migratory birds – should have no contact with the flock through the use of screens or overlying nets. Visitors wishing to see poultry should wash their hands and change their shoes and use footwear provided by the owner (e.g. rubber boots that are kept for such visitors). If visitors have birds of their own, they should not be allowed near the birds.

Ducks kept in ponds or paddy fields with other ducks of a different owner represent a high risk, unless all duck owners agree on the measures that can be taken collectively. For instance, erecting poles with netting that separate one owner's flock from another and taking turns in scaring away wild birds from landing or feeding within production flocks.

5.2 CLEAN AREAS MEAN HEALTHY CHICKENS, GEESE AND DUCKS

Keep the area of the flock clean from garbage (food waste, plastic bottles, glass bottles, tins or drums). When the owner or care person needs to attend to chickens or other poultry (e.g., collecting eggs, feeding or watering chores, change the bedding or the repair of fencing material), a change of clothing and boots should be required. These clothes and boots can be cleaned and disinfected upon exiting the enclosure and be ready for the next use. Dirty clothes should be washed with detergent and hung out to dry in the sun; boots

should be washed in chlorinated water, or with soapy water. Washing hands with soap before entering the caged area should be practised always. Tools (feeding scoops, shovels, brooms) and feeding pans used in the caged areas should be kept clean daily. All manure should be removed and disposed of properly (i.e. compost pile). Keeping a wide pale with chlorinated or soapy water for frequent use before entering or exiting the enclosure is a good reminder to follow biosecurity.

Keeping the cages clean prevents pathogens from accumulating and causing health problems. Clean cages keep the birds and eggs clean as well - which translates into better market prices.

Sick or dead chickens must be removed quickly and community animal health workers or the local veterinarian informed of such illness or death.

5.3 BUY HEALTHY: KEEP HEALTHY

Transportation of birds to the farm can represent a considerable risk – not only should the owner be aware of the "good" price obtained, but also that vehicles, (trucks, motorcycles, bicycles), cages, equipment and feed may be contaminated when returning or entering the farmer's property. Newly-purchased equipment should be thoroughly washed with soapy water or otherwise disinfected before use. Newly-purchased birds should be housed in a separate enclosure for at least two weeks before allowing them to mix with birds already on the farm. Owners are advised that it is important to keep species separate, and not mix ducks with chickens, chickens with pigs, or ducks with pigs. It is also good practice not to mix animals of different ages.

5.4 USE OF CLEAN EQUIPMENT – KEEPING DISEASE OUT

Poultry equipment, such as cages, egg crates, shovels or rakes, should not be shared between family or neighbours. Wooden pallets, wooden handles, or egg crates can be porous, and even though they can be treated with disinfectant, it is difficult to ensure that they are completely disinfected. Metal cages can be cleaned and disinfected; if these are borrowed because of necessity, they must be cleaned and disinfected by the owner of the birds before they are reused.

5.5 REPORT EARLY SIGNS OF A PROBLEM THAT COULD BE DEVASTATING

Many bird diseases look similar. Early detection and prompt reporting will probably help stop the spread of disease. Owners must know who and where to report abnormalities on the farm when they begin not when they end. Signs to be reported include: sudden death, depression and decreased appetite, diarrhoea, breathing difficulties such as coughing, sneezing and gasping, nervous twitching or dropped wings or paralysis, and swelling of the head with darkened combs, wattles, or legs.

Owners must be assured that early reporting of a problem will benefit them, their families and their village in the long run. In this regard, the government - in conjunction with the poultry industry - should be prepared to react and provide proper compensation (see section 4.3.3 above). **Failure to provide an incentive for compensation for disease reporting will undoubtedly lead to disease spread.**

5.6 A PERIOD OF REST

One prevention measure that can be instituted but requires planning and several enclosures is the practice of "all-in all-out". This method is used in many countries and envisages a complete growth cycle of chickens (or other species) from the moment of introduction – as in day-old-chicks – all the way to marketing age. At no time are other birds introduced into the enclosure. Once sent to market, the floor is scraped clean of faecal and feather debris, and bedding and feed removed; cages and other equipment are cleaned and prepared for the introduction of young healthy birds. It would be wise to keep the enclosures free of birds and other animals for a rest period of say, seven days, before bringing in the next batch of poultry.

With duck operations, the "all-in all-out" operation may be more difficult, unless there is planning in the growth cycle between birds using the same pond and double netting used between age groups. Double netting – 2-3 metres apart – implies additional cost, but decreases the opportunity of pathogens from contacting susceptible ducklings. Although ducks share the same water ponds in which avian influenza viruses may survive, it still decreases the likelihood of disease transmission.

5.7 VACCINATION AGAINST AVIAN INFLUENZA OR OTHER DISEASES

Vaccination, in general, increases the resistance of poultry to disease but does not eliminate the possibility that infection may occur in a flock. Prevention of disease and infection can only be accomplished with other aspects of prevention and improved biosecurity.

When poultry are to be vaccinated, it would be wise for the owner ensure that the vaccination team changes clothes and cleans and disinfects boots, gloves and equipment before entering poultry enclosures. Should the vaccination team resist such instructions, the owner should report the non-observance of biosecurity measures to the appropriate veterinary authorities.

5.8 COMPARTMENTALISATION

In the *OIE Terrestrial Animal Health Code*, compartmentalisation refers to one or more establishments under a common biosecurity management system containing an animal sub-population with a distinct health status with respect to a specific disease or specific diseases for which required surveillance, control and biosecurity measures have been applied for the purpose of international trade (more information available is in chapter 1.3.5 on *Zoning and compartmentalisation*).

In countries where the disease may be present in some areas or confined to some production systems, this concept can be applied to poultry operations that will adopt strict biosecurity measures to prevent the introduction of the disease all along the production process.

In poultry operations that are tightly controlled by producers, a strict method of operation must be assured to prevent disease from entering the operation. Besides the measures mentioned in the above sections of this manual, operators need to constantly monitor areas or risk and practise "all-in all out" measures. For example: the origin of fertilised eggs, certified biosecured and reliable hatcheries and their incubators, certified feed sources and

transport companies must be registered, dated and documented. The poultry operation must register a complete account of their activities and sources, which include:

- Census of production – stages and location
- Protocols for training of operators
- Instructions to operators within the farm (clothing, cleaning, vaccination, feeding, reporting, etc.)
- Protocols for cleaning and disinfection
- Purchases and location of suppliers
- Vermin and insect control measures
- Egg crate circulation, management and acquisition
- Employee profiles and responsibilities
- Transport control on and off the premises
- Employee and employee-family awareness
- Registries open to frequent regulatory inspection

One area of concern for regulatory authorities is the reality that many highly developed production poultry operations have their own diagnostic laboratories that may carry out diagnostic assays without reporting to the authorities. It is indispensable that such commercially associated laboratories and their managers be made aware of the importance of reporting disease occurrence and consequences to international trade for the country and their enterprise.

Commercial operators should be linked with prevention, contingency and emergency plans for national and regional success and health.