

Biosecurity

Protecting Our Birds and Industry

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² Al Dam²

Did you know?

Disease can cause serious economic and social impacts on all types of birds and their owners. For example, the Avian Influenza (AI) outbreak in Virginia (2002) affected gamebirds and many other non-commercial species. The Exotic Newcastle Disease (END) outbreak in California in 2002 cost 200 million US dollars. Gamebirds, exotics and backyard birds were all involved. The AI disaster in B.C. in 2004 cost 380 million Canadian dollars and more than 18 million commercial poultry and 18 thousand gamebirds and backyard poultry had to be destroyed.

Why should you care?

You probably raise birds because you love what you do and want to produce good quality and healthy birds for yourself and your customers. In addition, you want to prevent any catastrophe where your birds die and/or your industry is shut down resulting in local, regional, and global restrictions.

What is Biosecurity?

Biosecurity is simply a set of organized, well-considered procedures that you as a farmer follow with the primary objectives to:

1. reduce exposure of your birds to disease causing agents.
2. prevent any disease causing agents that might be present on your farm from leaving.
3. ensure a healthy and quality end product for consumption or enjoyment.
4. make the farm secure from unwanted visitors.

Biosecurity only works if **YOU BELIEVE** that the basic principles are sound and are willing to implement them on your premises. By implementing biosecurity, you are not only protecting your birds, but you also ensure the success and sustainability of your industry.

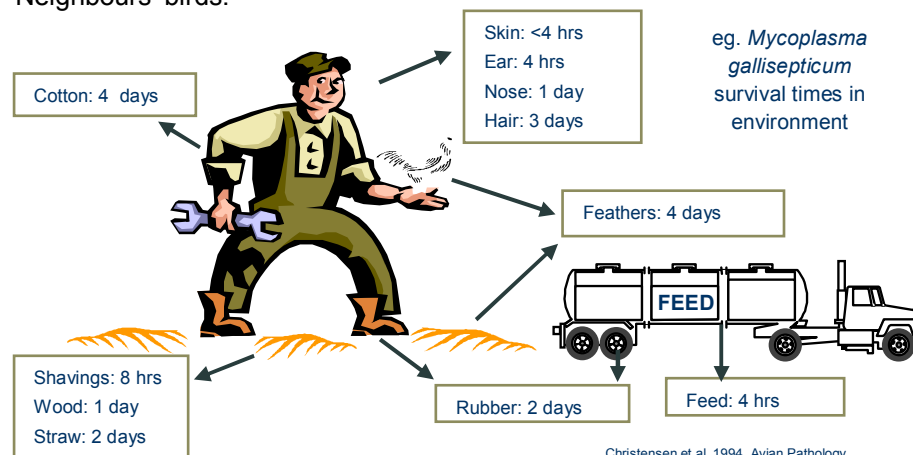
Do I need a biosecurity program when I only have a small number of birds?

There are thousands of small flock owners in Ontario. The interest in recreational activities involving birds is growing and there is an increase in the number of backyard producers and hobby farmers raising small numbers of poultry for their family's consumption/enjoyment. There is a slow, but steady growth in the game bird industry. Accompanying these trends is the tendency to increase stocking density, purchase birds from unknown sources, raise multi-species on the same farm, move birds over significant distances and use commercial sales barns to sell birds. These practices result in mixing of species from different points of origin. Disease control is seldom considered, but all of these actions have associated health risks and increase the chance of disease spread.

Disease can result in devastating losses regardless of the size of your operation. Small operations with poor disease control become a significant risk to all feather industries whether regulated by marketing boards or not. In the event of a foreign animal disease your birds are at just as much risk as a large commercial enterprise. **So, yes, you do need a biosecurity program regardless of the number of birds that you raise.**

Common sources of infectious agents:

- People are the number one source of contamination. Hands, footwear, clothing, even your hair can harbour micro-organisms.
- Bird shows, sales barns and anywhere birds from different origins are mixed together.
- Equipment including hauling crates, coops, catching equipment, feeders, drinkers, and farm tools.
- Vehicles and equipment exposed to various sources of infection both inside and outside the farm.
- Wild birds, rodents, other pests including other domestic animals.
- Neighbours' birds.



Christensen et al, 1994. Avian Pathology

Biosecurity Principles

Principle 1

Procedures for mortality management should be present on each farm.

Principle 2

Know the health status of your flock and be prepared to react.

Principle 3

Buy clean/stay clean. Quarantine and isolation procedures should be implemented for all new arrivals and for all resident birds that have been off the property.

Principle 4

An all-in-all-out approach, segregation of age groups and appropriate "down time" between flocks should be targeted.

Principle 5

Ensure that access to the barn and premise is controlled through the establishment of protective zones and controlled access points.

Principle 6

Drinking water for birds should be free of contamination and meet water quality standards for livestock/poultry consumption.

Principle 7

Integrated pest control should be in place (insects, wild birds, rodents).



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Ministry of Agriculture,
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Conclusion

The factsheets provided with this package outline seven important principles of biosecurity. Remember, that disease control and prevention are complex. Prevention and intervention methods must be done in a logical sequence in order to be effective. Thus, adopting one principle or recommendation without first doing another may render the action unsuccessful. The guidelines have been prioritized based on published infectious disease literature (i.e. Principle 1 has the greatest potential for reducing risk of a serious disease epidemic compared to Principle 2 etc.). Nevertheless, all of these principles are important for a comprehensive biosecurity program.

FACTSHEET 2.1
March 2008

TAKE HOME MESSAGE

There is a feasible and cost-effective biosecurity program that can be designed, written, and implemented for **every type of bird operation.**

The important thing to remember is that biosecurity only works if you believe it to be valuable and ensure that everyone follows your program, **NO EXCEPTIONS.** Make biosecurity part of your everyday routine. Biosecurity is everyone's responsibility.



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Ontario²

CONTACT
OMAFRA's

Agricultural
Information
Contact Centre:

1-877-424-1300
ag.info.omafra@ontario.ca

SUGGESTED REFERENCES

Checklist to implementing an effective poultry biosecurity plan:
http://www.omafra.gov.on.ca/english/livestock/poultry/facts/bio_plan.htm

Biosecurity recommendations for small flock poultry owners:
<http://www.omafra.gov.on.ca/english/livestock/poultry/facts/05-079.htm>

Principle 1

Procedures for mortality management should be present on each farm.

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² Al Dam²

The old adage "if you have livestock you will have deadstock" has truth. All farms will have some losses. Proper handling of deadstock is an important first principle of biosecurity and should include the following: a physical structure for proper carcass isolation/storage, an accepted method of carcass disposal, and an action plan that directs the day to day handling of dead birds found on the farm.

All dead birds should be assumed to be infective and handled appropriately to ensure that any potential disease causing agents are not spread to other birds on your premise or to other farms. It is well documented that if only this principle had been followed that the foot and mouth disaster in livestock in Britain could have been contained.

Discussion

Dead stock handling was identified as an important area that could be improved for almost every farm that we visited in each of the non-regulated feather industries. Many producers were throwing carcasses on the manure pile, leaving them out for the coyotes, burying them in the garden or even placing them in garbage bags and sending them to landfill. Remember that most infectious agents survive for considerable amounts of time in the dead carcass. Bacterial and fungal agents will actually replicate and increase in numbers in the carcass.

Rodents, flies and other scavengers with access to these carcasses can carry these agents over considerable distances to neighbouring farms or other areas on your farm. It is well documented during Avian Influenza outbreaks that flies and

RECOMMENDATION #1

Each farm should have a properly designed dead bird isolation/storage facility where dead birds are covered and protected from scavengers.

RECOMMENDATION #2

Each farm should have appropriate carcass disposal. This may include on-farm disposal (incineration, composting and burial, according to provincial or municipal guidelines) or pickup at the farm-gate by a rendering service (i.e. no farm access).

RECOMMENDATION #3

Each farm should have appropriate daily procedures to follow with respect to dead birds found in the barn.

Biosecurity Principle 1



scavengers are significant risk factors in disease spread and that the virus is easily carried to other barns on hands or in manure on the bottom of boots.

All dead birds should be picked up as soon as they are found and placed in a closed, secure container for transport to the disposal area. This may be as simple as using a pail or garbage can with a lid or putting the birds in a freezer. Wear gloves when handling carcasses to protect yourself from potential pathogens and hand sanitation after carcass handling is a critical step in controlling disease spread and human infection. Bacterial agents like *Salmonella* or viral agents like Avian Influenza pose a significant risk to human health.

The gamebird industry that raises birds for hunt clubs poses a special problem as birds are housed in large outdoor flights that may be quite widely separated. In these cases separate bins or covered plastic pails should be available at each pen to facilitate carcass removal. Carcasses may be difficult to locate in pheasant runs that have lots of brush cover. Carcasses are an important source of botulism toxin and cannibalism is common. Regular and prompt carcass removal will reduce the risk of botulism in gamebirds.

There are many methods for disposing of the carcasses. The method that you choose depends on your facilities and local environmental regulations. Please refer to the **Disposal of Bird Mortalities** (3.2) and OMAFRA factsheet 03-083 **On-Farm Composting of Livestock and Poultry Mortalities** (4.2) in the supplementary factsheets for more specific information.



A pail can be used for frequent pick up of the dead birds in the barn and makes it easy to transport the dead to a freezer or compost pile.

TAKE HOME MESSAGE

Proper deadstock handling and disposal is a simple and highly effective method of reducing the risk of disease spread on and off your farm.

- Protect yourself.
- Place dead birds in secure, scavenger proof container for transport to disposal area.
- Use an effective and legal method of carcass disposal.
- Have procedures in place so that the above actions are carried out immediately and without delay.



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Principle 2

Know the health status of your flock and be prepared to react

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² Al Dam²

In order to recognize if an important disease condition is present on your farm and to initiate a prompt and effective response, it is critical to know the disease status of your operation. In the event of a foreign animal disease, early diagnosis and disease surveillance is critical in order to contain the pathogen. Monitoring flock health should include: regular flock observation and culling, maintaining a record of losses and illnesses, recognizing suspicious clinical signs that might suggest a contagious disease problem or recognizing that an unacceptable level of mortality is occurring. Once these indicators of contagious disease are recognized, immediate action to diagnose the disease and activate an "emergency response" should be undertaken.

Discussion

Most producers in non-regulated feather industries monitor their birds/flocks regularly and have a pretty good idea if the birds are healthy. Very few keep written records to document illness, treatments (medications/supplements used), treatment success or mortality. Written records are the foundation of flock health monitoring in the commercial feather industries where records are kept on everything from daily water and feed consumption to a visitor log-book. In these industries having up-to-date records is part of the audited On-Farm Food Safety programs. Health records are extremely valuable in helping you recognize disease patterns and assisting you in tracking when and where a disease might have come from.

RECOMMENDATION #1

Birds should be monitored for health status at a minimum of once daily and a record should be maintained of bird illness and mortality.

RECOMMENDATION #2

Recognition of suspicious clinical signs or unusually high mortality should trigger an "emergency response" that includes obtaining a diagnosis as soon as possible. This will include, but is not limited to immediately contacting the farm veterinarian, self-imposed barn/premise isolation/containment, self-declaration and notification of appropriate authorities and even maintaining a visitor log for trace-back purposes. All employees should be familiar with the appropriate procedures to follow in the event of unusual mortality or illness.

RECOMMENDATION #3

Each farm should establish a working relationship with a veterinarian. If a foreign animal disease is suspected, veterinarians are trained in the appropriate methods of sample collection and submission to a certified veterinary diagnostic laboratory.

Biosecurity Principle 2



Very few non-commercial feather fanciers have established a relationship with a veterinarian. Many veterinarians do not deal regularly with bird health problems, but their basic skills and knowledge in animal health can be readily applied to birds. Although the economic value of individual birds may make you hesitate in seeking veterinary help, prompt diagnosis and disease control may save your entire flock and/or your industry. It is therefore worthwhile for you to promote a relationship and encourage interest from your local veterinarian as these disease professionals can be extremely helpful in the event of a serious disease concern and in designing sound, on-farm disease control programs. Remember, the principles of disease control are similar across species.

Very few farms have an "emergency response" plan. The basic principles of disease containment are simple. "Do unto others as you would have them do unto you" is the rule to follow. If you observe suspicious clinical signs or excess mortality, then do not take your birds to shows or enter them in races. Stop selling your breeding or replacement stock and don't take birds from your flock to sales barns. "Lock down" your facility, contact your veterinarian, get an accurate diagnosis, don't visit other producers that raise birds or allow visitors into your barns. Place your facility in a self-imposed quarantine mode until you know the diagnosis and you are certain the disease is not going to spread to others.

If the disease turns out to be of significance, then notify others. For example in the racing pigeon industry, make your fellow racers aware that a contagious disease may put their birds at risk. Self-declaration of a disease problem is one of the most difficult and yet most honourable things a producer can do. In the long term it is very important for the sustainability of the industry and in the case of a Foreign Animal Disease (FAD) it may prevent widespread eradication of birds in your segment of an industry. Take the time to read the **Foreign Animal Disease** factsheet (1.4) that outlines the procedures that CFIA will follow in the event of a serious FAD. Having good biosecurity in place may save your birds!

TAKE HOME MESSAGE

Flock health monitoring and prompt action in the face of a health problem is essential

- Monitor flock health so you can recognize a disease concern early.
- Contact a veterinarian and get a rapid, accurate diagnosis.
- Impose self-quarantine if any contagious disease is suspected.
- Notify neighbours and colleagues to help protect their birds and your industry.

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Principle 3

Buy clean/stay clean. Quarantine and isolation procedures should be implemented for all new arrivals and for all resident birds that have been off the property

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² Al Dam²

Infectious diseases including Laryngotracheitis (ILT), mycoplasmosis (*Mycoplasma gallisepticum*), avian pox virus, avian cholera (*Pasteurella multocida*) and many others are generally **bought** or **brought** onto a farm. Breeding replacements or new genetic stock should only be purchased from honest and reputable breeders that are willing to disclose potential health problems and who follow a legitimate biosecurity program. Any of your birds that have been taken to bird shows, swap meets, markets, fairs or entered in races may have been exposed to infectious agents and should be considered potentially infective when they return to your farm. Every bird that has been off your premise should be considered as a suspect carrier of disease.

Quarantine/isolation facilities should be available to house all new additions for a period of at least 2-4 weeks. This time frame represents the incubation period of most bacteria and viruses. This means that if your birds were exposed and infected, a clinical disease will likely show up within 2-4 weeks. Quarantine facilities should be physically isolated/separated from the main flock or group of birds to ensure there is no contact between them and your own flock. Diligent and rigorous management and enhanced sanitation should be followed in the quarantine facility to prevent any pathogens from moving to and from the main flock.

RECOMMENDATION #1

A quarantine/isolation facility should be available to separate all birds arriving at your farm. The area can be a separate building or isolated room with no access to other birds. Quarantine time should be a minimum of 2-4 weeks based on the incubation period for most infectious diseases.

RECOMMENDATION #2

Each farm should have procedures in place to manage these new additions or returning birds to minimize risk of spreading pathogens to the main flock. This will include a separate isolation area or a building equipped with clean clothing and boots, separate feed, water and manure handling equipment and a hand sanitizer for use as you enter and as you leave the area.

RECOMMENDATION #3

A regular worming and parasite control schedule should be developed in consultation with your veterinarian and implemented before new and returning birds are introduced to your flock.



Other Risks

Many birds have intestinal worms or external parasites like mites or lice on feathers. You will regret introducing these parasites into your operation. Prevention by treating the birds while in quarantine/isolation is easy and effective.

Processing plants are another major source of bird mixing and potential disease spread. The Avian Influenza outbreak in Texas (2004) and Pennsylvania (1994) were linked to sale of birds in live bird markets. Crates carrying pigeon squab or back yard poultry left at processing plants while birds are being processed are a common route of bringing infectious agents back to your farm. Be sure to physically clean and then sanitize all equipment used to transport birds to these sorts of facilities. See **Cleaning and Disinfection** factsheet (3.3).

FACTSHEET 2.4
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TAKE HOME MESSAGE

Buy clean/stay clean ... quarantine, isolate and vaccinate

- Obtain an accurate flock history of new purchases.
- Establish a quarantine/isolation facility for all birds brought onto the premise.
- Establish a protocol for feeding and handling birds in the quarantine to reduce risk of spread of disease to the main flock.
- Deworm, delouse and vaccinate birds immediately upon arrival.
- Treat any sick birds and resolve the problem before adding them to your flock.
- Clean and disinfect all equipment, crates, clothing and practice good personal hygiene.
- Design your vaccination program in consultation with your veterinarian.



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Principle 4

An all-in-all-out approach, segregation of age groups and new arrivals and appropriate "down time" between flocks should be targeted

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² Al Dam²

In the commercial poultry industry proper scheduling enables segregation or isolation of birds within individual barn units, regulates traffic flow within and between premises, and reduces proximity risks between barns where loading or unloading activities are occurring and live birds remain on a premise.

The all-in-all-out concept is ideal for disease control as all birds arrive at the same time and at the same age, are grown for a pre-determined time to market weight and then all are shipped to processing at the same time. This scheduling allows for maximum downtime between flocks for barn cleaning and disinfection. All-in-all-out scheduling is a key principle in commercial regulated poultry industries and it may also be possible in some of the non-regulated feather industries like meat-type game bird production.

An all-in-all-out system is not possible for many non-regulated feather industries. Nevertheless, there are many simple and practical procedures that can be done to reduce disease risk.

RECOMMENDATION #1

Each farm should have a bird arrival and bird dispersal schedule. All-in-all-out scheduling (within seven days) should be the target where possible, keeping the times of bird delivery and shipping as short as possible.

RECOMMENDATION #2

Each farm should maximize the down time between flocks where possible. If you have a multi-age flock, you should schedule sufficient time for cleaning and disinfecting of each holding pen. Ideally, this should be 14 to 21 days to allow adequate time for pathogen reduction.

RECOMMENDATION #3

Different age groups and different species groups should be kept separate from each other.



Discussion

If an all-in-all-out practice is not possible in your operation, these are a few suggestions to help reduce risk:

Housing different bird species separately is important as diseases that cause few problems in one species may cause serious disease in others. For example, Histomoniasis is a common and serious parasitic disease affecting pheasants, pea fowl and turkeys that is transmitted in the feces of often clinically normal chickens. The most frequent reason for disease in these species is raising them with chickens or on ground or pens where chickens were previously housed.

Separation of birds by age is another important biosecurity procedure. In general, young birds are more susceptible to disease and so if your facility is a multi-age operation or if you are raising breeding birds and growing the offspring, you should strive for maximum cleanliness in the hatching and brooding areas. Ideally this would include changing boots, wearing clean protective clothing, and washing hands before moving into and out of these areas. Older birds generally can tolerate "less clean" conditions. As you do your daily chores, work from youngest to oldest.

Some vaccines that are safe in older birds may cause disease in younger birds. Vaccination schedules should be designed in consultation with your veterinarian.

Scheduling and movement of birds between pens should be carefully considered to allow maximum downtime so the pens can be cleaned and sanitized. See **Cleaning and Disinfection** factsheet (3.3). Pens, cages and nesting areas should have a regular schedule of cleaning and disinfection to reduce pathogen load on the farm.

TAKE HOME MESSAGE

- Schedule the arrival and dispersal of your birds where possible.
- Maximize the down time between flocks or use a rotation of pens to allow time for proper clean out and sanitation.
- Different age groups and different species should be kept separate from each other.

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Principle 5

Ensure that access to the barn and premise is controlled through the establishment of protective zones and controlled access points

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² Al Dam²

It is well documented in the disease literature that the movement of people and pets is an important route for bringing disease-causing agents into a barn or onto a premise. Controlling access to the areas where your birds are housed is an important biosecurity procedure. In commercial poultry operations the actual barn where the birds are housed is considered a "fortress" or Restricted Area (RA) where visitors are not allowed without special permission and without wearing some sort of protective clothing. In addition to this highly restricted area commercial poultry producers also create an area around the perimeter of the barn where they restrict access of trucks and visitors vehicles that they refer to as the Controlled Access Zone (CAZ).

Most farmers do not want strangers or neighbours that may not be concerned about disease control wandering into their barns and amongst their livestock. This principle simply emphasizes the importance of structuring your farm environment so that strangers and visitors understand that the health of your birds is important and trespassing is not acceptable. If these procedures are in place then it becomes easy for you to "lock down" your birds in the event of a significant disease problem in your area.

Figure 1 is a schematic that shows an ideal layout of the access zones.

Discussion

This principle is very important and will be one that the Canadian Food Inspection Agency (CFIA) will be looking for in the event of a foreign animal disease outbreak. Having your barn locked and prohibiting visitors from having direct access to your birds is quite simple. In most cases signs or locks on doors are sufficient. Think of how you would "lock down" your facility if you were leaving for a holiday and wanted to keep out strangers.

Most farmers find it inconvenient to change clothing when they go into the barn. Regardless, research indicates that changing boots and cover-alls between barns is important in preventing pathogen movement. At a minimum, having a set of clothing dedicated to use in your barns that is not worn off the property is a good first step.

QUARANTINE ROOM NOTES

Requires a separate room with a separate entrance when dealing with:

- New birds
- Show birds (after visit to shows)

To increase biosecurity when dealing with birds in quarantine you should have:

- Different boots
- Different coveralls
- Separate hand washing area

If birds inside the barn or pens get sick do not move them to the quarantine room. They should stay in a sick pen inside the barn so that no pathogens leave the area and also so that none of your new or returning birds are exposed to the pathogen.

Schematic of a farm or bird housing layout with

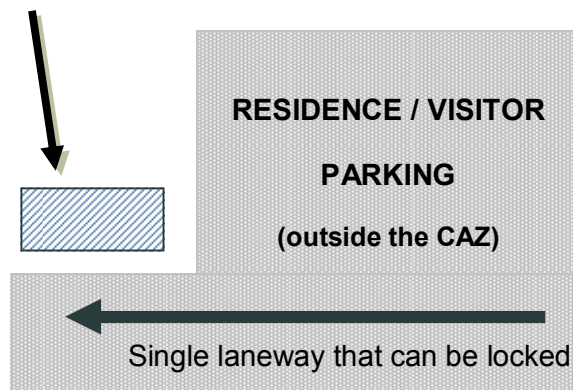
Your Restricted Area is the most crucial area because it is where your birds are living. Depending on your operation, this could be one building, multiple barns, outdoor pens or a combination of both. The quarantine/isolation room can be a separate building or just have a separate access point, and no connection to the actual bird pens, to ensure there is no cross contamination.

PERIMETER FENCE

Keeps all traffic, animals and people out.

DEAD STOCK FREEZER

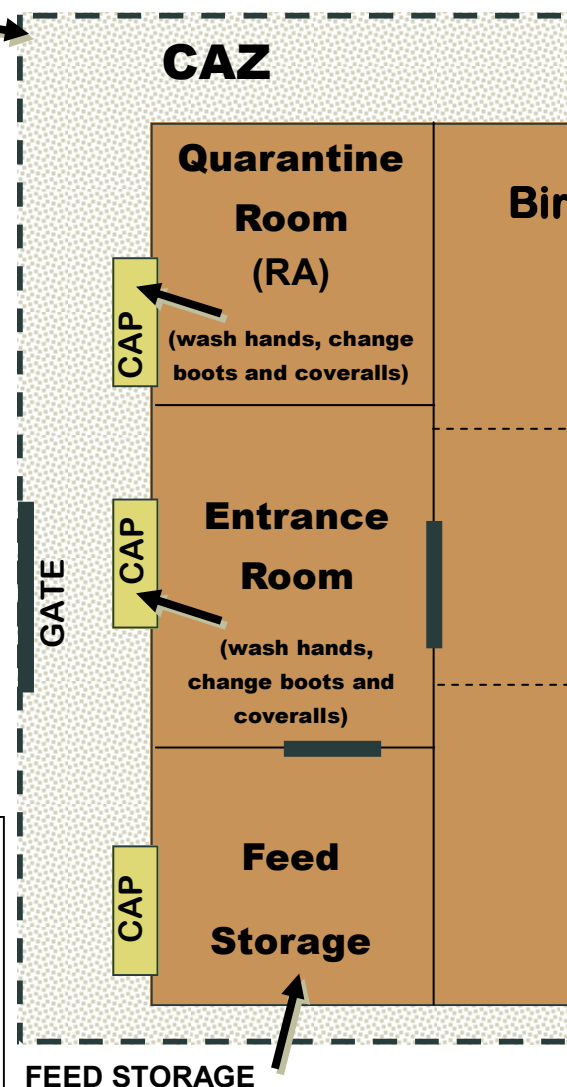
Location should be outside CAZ and depends on use of compost or dead stock pick up.



LEGEND

- CAZ** — Controlled Access Zone
- CAP** — Controlled Access Points
- RA** — Restricted Area

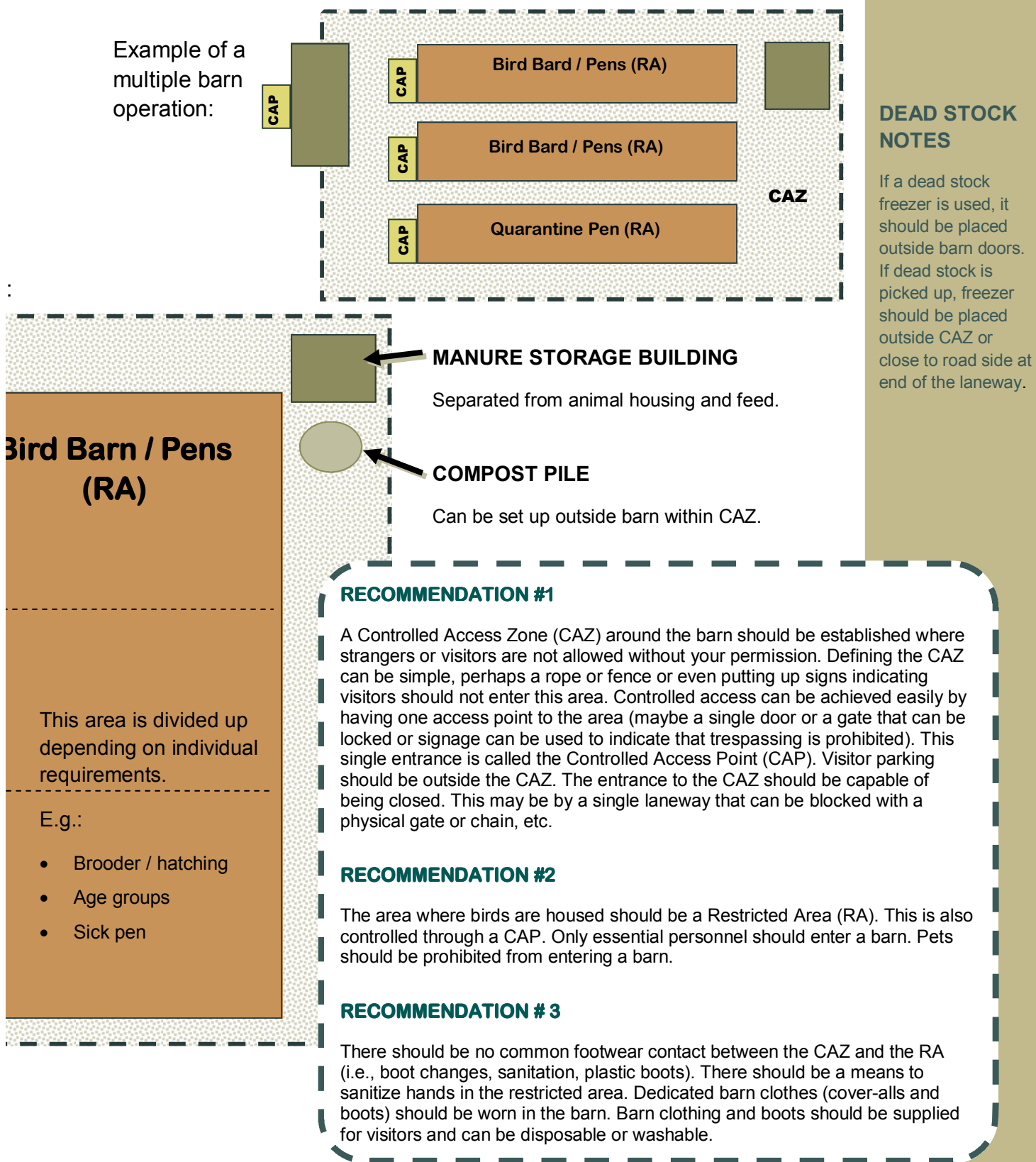
Example of a single barn operation:



FEED STORAGE

Room with external access for deliveries and internal access for easy access.

with “ideal” biosecurity zoning



Biosecurity Principle 5



Dirty boots and hands are another proven route of spreading disease. Hand sanitizers are now readily available, reasonably priced and easy to use. If wash stations with running water are not available, these waterless hand sanitizers are very useful. Hands should be sanitized before entering or leaving the barn and with particular care if you are entering or leaving breeding areas, the hatchery or brooding areas where young birds are being housed. Traditional foot baths are usually ineffective as they are rarely cleaned or recharged with fresh disinfectant and an **improperly managed foot bath may become a source of infection.**

FACTSHEET 2.6
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TAKE HOME MESSAGE

Keep your birds secure from strangers and visitors with controlling access to the barn and farm by establishing protective zones.

- Your operation should be mapped out into a CAZ, CAP and RAZ.
- The barn should be a "fortress" and the access to the barn or pens housing birds should be controlled and lockable.
- Signs or other readily visible indicators should alert visitors that they are not welcome without your permission.
- Barn clothes should be dedicated to the barn.
- Visitors should be supplied with protective clothing. At a minimum plastic boots should be supplied and visitors should put these on before entering the RA.
- Hand sanitizers should be available at the entrance of the barn and everyone should be required to use them.
- The entrance to the CAZ should be able to be closed in the event you need to "lock down" the farm (i.e. chain or locking gate/door).



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Principle 6

Drinking water for birds should be free of contamination and meet water quality standards for livestock/poultry consumption

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² Al Dam²



Outdoor birds should have clean and covered water to drink and swim in, like those shown above.

Waterers should be cleaned and sanitized often to avoid contamination and buildup.



Discussion

Water is the single most important nutrient. Birds should always have access to clean, fresh water. Contaminated surface water is a known source of infectious agents. Recent Avian Influenza outbreaks around the world have incriminated wild birds as a significant reservoir for the virus. Among wild birds, waterfowl are the most important reservoir for AI virus. Infected waterfowl are generally clinically normal but may pass the virus through their feces resulting in surface water contamination. AI virus can survive in water for over 40 days. Other agents such as *Campylobacter*, *Salmonella*, *E. coli* bacteria etc. are well known, common contaminants of surface water. The Walkerton water disaster in 2000 was due in part to *E. coli* contaminated surface water that entered a municipal well. *Pseudomonas* is another water-loving bacteria, and a significant pathogen for hatching and baby birds.

RECOMMENDATION #1

Drinking water should not come from open ponds or other open sources. Water should be treated if necessary. For range production, closed water systems should be used.

Biosecurity Principle 6



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For these reasons domestic birds should not have access to untreated surface water. Allowing ducks and geese access to ponds and open water sources may appear to be an easy way of supplying water, but it is a high risk practice for disease spread. Remember that infection can go both ways ... i.e. wildlife may contaminate the water source for your birds, but also the feces from your birds can be infectious for wild species.

It is proven that wild birds in Asia became reservoirs for the highly pathogenic H5N1 AI virus after they contacted water sources utilized by sick commercial ducks and chickens. Wild birds will be attracted to bird feeders and water supplied to your birds, so all water systems used for domestic birds should be covered to reduce use by wildlife.

Water lines and drinkers routinely become contaminated and must be regularly cleaned and sanitized. See **Cleaning and Disinfection** factsheet (3.3). Water sources with high mineral and iron content may result in build up of scale in water lines. Water quality for all livestock use should be checked regularly. See **Feed and Water Management** factsheet (3.1).

TAKE HOME MESSAGE

Drinking water for birds should be free of contamination and meet water quality standards for livestock/poultry consumption

- Do not use untreated water from surface water sources as drinking water for your birds.
- Do not allow birds access to unprotected surface water sources.
- All drinking water sources for range or free run birds should be covered to prevent wild bird access.
- Waterlines and drinkers should be cleaned regularly.



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1-877-424-1300

Principle 7

**Integrated pest control should be in place
(insects, wild birds, rodents)**

Dr. Bruce Hunter,¹ Ashley Whiteman,¹ Dr. Babak Sanei,² and Al Dam²

Pests are an important potential source of infectious agents to domestic birds. The term "pest", in this context, refers to all unwanted creatures that may damage production, reduce production efficiency or introduce infectious agents that may make your birds ill. This includes everything from insects (flies, darkling beetles etc.), wild birds (waterfowl, feral pigeons, house sparrows, owls etc.), predators (coyote, fox, weasel, raccoons etc.) to competitors that might eat feed or destroy facilities (deer, gulls etc.).

There are methods to control each of these classes of "pests". An integrated pest control program is designed to control multiple pests See the **Pest Management in Bird Production** factsheet (3.5).

Feed pails left uncovered attract flies and other unwanted pests.



Feeders and waterers should be refreshed daily and covered (example in photo) to discourage pests.

RECOMMENDATION #1

Wherever possible target humane methods of pest exclusion. This may include but is not limited to: covered feed bins, closed feed systems, screened openings, close cut grass or a gravel strip outside building foundation to inhibit rodents, emptying of feed lines/boots/hoppers at cleanout and CAZ kept free of debris and long vegetation where pests could live.

RECOMMENDATION #2

For range production, organic farming etc. alternate measures can be used including: sufficient roofed space to house all poultry at risk times (seasonal) and well maintained fencing against livestock, pets, predators and wild bird control.



FACTSHEET 2.8
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Discussion

Pests pose a problem in all animal agricultural industries. Darkling beetles cause serious economic losses in poultry houses by maintaining disease-causing agents from one crop to another and by chewing on the barn infrastructure and insulation. Rodents can carry disease and they do an amazing job destroying insulation and chewing on wiring, sometimes causing fires.

House sparrows commonly carry *Salmonella* sp. Feral pigeons are a frequent source of Trichomoniasis. See **Trichomoniasis** factsheet (6.25).

Great horned owls (pictured here) frequently kill game birds and range-reared poultry. Waterfowl are a main reservoir for the Avian Influenza



viruses. Raccoon feces contaminating straw and animal bedding frequently contain raccoon roundworm eggs (*Baylis ascaris*) that if ingested can result in serious neurological disease in ratites and pigeons. See **Raccoon Roundworm** factsheet (6.20). These are only a few of the many serious detrimental effects of unwanted pests on an agricultural operation.

Most of these impacts can be managed and significantly reduced with a well thought out and properly implemented integrated pest management plan. In many countries under the threat of highly pathogenic Avian Influenza, laws have been passed that require that all domestic birds be raised under an enclosure with a roof or netting to prevent contact with wild birds.



Cutting grass and weeds away from barns discourages rodents from inhabiting the area.

TAKE HOME MESSAGE

An integrated pest management plan should be in place on every farm

- Humane methods of pest exclusion should be attempted first by striving to make your bird housing areas "pest proof".
- Lethal methods of pest control are possible and should be used in consultation with pest control experts to ensure safety to pets, people and non-target species.



UNIVERSITY
of GUELPH¹

Ontario²

CONTACT

OMAFRA's
Agricultural
Information
Contact Centre:

1-877-424-1300
ag.info.omafra@ontario.ca