Biosecurity for Small Poultry Facilities

STOP

...poultry at work please obtain authorization before entering

NO ADMITTANCE

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07/05
Biosecurity involves a range of management procedures designed to prevent the spread of disease onto your farm. It is one of the most effective and cheapest means of controlling disease. All poultry producers need to be aware of the need for strict biosecurity and hygiene on their premises, whether they have 100 or 10,000 birds. This includes controlling the transmission of disease-causing agents between animals, from animals to feed and from animals to equipment that may directly or indirectly contact other animals.

**BENEFITS:**

- Helps keep out exotic diseases (i.e. Newcastle, Avian Influenza)
- Reduces the risk of zoonotic diseases becoming established (i.e. Salmonella)
- Limits spread of disease
- Improves overall flock health
- Cuts costs of disease treatment
- Reduces losses and could improve farm profitability

Biosecurity is composed of three major areas:

1. Isolation
2. Traffic Control
3. Sanitation

**ISOLATION**

Isolation refers to the confinement of animals within a controlled environment. This applies to separating your flock from wild animals. Your farm should have some sort of traffic control for pets, rodents, wild birds, insects and predators. All openings should be screened to keep these animals from entering the housing facilities. The used of rotenticides and pesticides is recommended, especially if they are a problem (see Appendix A). Predators are almost impossible to control when birds are housed outside, but can be reduced by establishing a “clear zone” free of vegetation around outdoor pens and buildings. The “clear zone” forces predators to approach the pens or buildings without the benefit of a cover, and it also discourages rodent and insect traffic.

Isolation also applies to the practice of separating birds by age group, species and different sources. In larger poultry operations, the “all in – all out” management approach allows the depopulation of facilities between flocks, which allows time for proper house cleaning and disinfection to break the cycle of disease. This type of management is not always practical for breeding, game bird, and exotic or small flock poultry farms. However, it is possible to maintain a separate pen or area to isolate and quarantine all new, incoming birds from the resident population. The isolation areas should be located as far away from the resident birds to prevent the possible transfer of disease. The new birds should be quarantined for a minimum of two weeks. If no signs of illness are seen after the isolation period, the new birds may be removed from the isolation area. Raising various types of fowl on one farm increases the risk of disease.
Disease-causing organisms that pose no harm to one type of fowl may be lethal to another. If you wish to raise more than one type of fowl it is best to isolate different species to reduce the risk of health problems. The same practice applies to different age groups. Adult birds often carry levels of disease-causing organisms that cannot be tolerated by newly hatched poultry, hence the practice of always visiting the younger birds first.

**Vaccination**

Vaccination of poultry is the easiest form of disease prevention. The age of vaccination is important in determining the type of vaccine to be used (live or killed) and this will affect the level and duration of immunity. New birds are a form of disease threat to the home flock – always use the same vaccination program for the new birds. Failure to do so may expose the new flock to a disease they are not protected against. Purchase poultry only from reliable, certified disease-free sources that have records of appropriate vaccinations.

**Flock Health and Management**

To manage poultry facilities for maximum health and productivity, birds must be kept as healthy as possible. Providing clean, dry and warm facilities will help maintain the health of the flock and reduce the chance of disease. Water and feed is important for disease prevention – many vaccines and medicines are administered through water and feed. Feed should be nutritionally balanced, free from toxins and of high quality. Discard any feed that is contaminated, moldy, or has a bad odour. Feed medicated rations to poultry to prevent common diseases, such as coccidiosis or to allow the bird to develop immunity through graduated exposure to the disease-causing organism. Fresh, clean water should be provided daily, especially during hot weather.

Proper disposal of dead birds is vital in preventing the spread of disease. Appendix B outlines composting poultry mortalities on-farm in accordance with Ontario Ministry of Agriculture and Food (OMAF) guidelines.

**TRAFFIC CONTROL**

Control of human traffic is essential in a biosecurity plan. Allow building access only to necessary personnel. As mentioned earlier, human contact is one way disease-causing organisms are transferred to poultry. The use of disinfecting foot dips and hand sanitizers at the entrances/exits of buildings is strongly recommended. Avoid visiting poultry buildings on other farms to reduce the spread of diseases between farms. Directing the flow of on-farm traffic from the youngest to oldest birds will reduce the chance of a disease being spread to newly hatched poultry. As well, direct on-farm traffic from resident to isolation areas to prevent the spread of disease to your established flock.

**SANITATION**

Sanitation refers to the disinfection of materials, equipment and people entering the farm, as well as the cleanliness of the farm personnel. Disease-causing organisms are easily introduced or transmitted to poultry in various ways:

- Carriers within a flock
- Eggs from infected breeder flocks
Birds recently acquired from an outside flock, particularly those with low or unknown health status
- Human contact – hands, feet and clothes
- Movement of poultry, people, vehicles and equipment between and within farms (Figure 1).
- Feral birds, predators, rodents, flies, and insects
- Unsatisfactory cleaning and disinfection of equipment and supplies (presence of feathers, dust and manure)
- Using shared farm equipment and vehicles, which have not been effectively cleansed and disinfected between use
- Improper disposal of carcasses
- Live or contaminated vaccines
- Contaminated premises through soil or old litter
- Contaminated feed or water
- Air-borne particles

**Figure 1.** Transmission of Disease-Causing Organisms Between Farms (T. Nelson & N. Tablante, 2004).

Disease-causing organisms generally die within two or three days. However, under certain conditions, such as cold, damp surroundings, they may thrive and survive much longer. Table one gives approximations for the lifespan of several disease-causing organisms when they exist away from poultry.

**Table 1.** Longevity and Health Effects of Poultry Disease-Causing Organisms (J. Jeffrey, 2004)
<table>
<thead>
<tr>
<th>Disease</th>
<th>Health Effects on Poultry</th>
<th>Lifespan Away from Poultry</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bursal Disease</td>
<td>suppressed immune system</td>
<td>months</td>
</tr>
<tr>
<td>Coccidiosis</td>
<td>diarrhea, death</td>
<td>months</td>
</tr>
<tr>
<td>Duck Plague</td>
<td>diarrhea, death</td>
<td>days</td>
</tr>
<tr>
<td>Fowl Cholera</td>
<td>fatal pneumonia</td>
<td>weeks</td>
</tr>
<tr>
<td>Fowl Coryza</td>
<td>swelling around eyes, colds</td>
<td>hours to days</td>
</tr>
<tr>
<td>Influenza</td>
<td>severe fever, death</td>
<td>days to weeks</td>
</tr>
<tr>
<td>Laryngotracheitis</td>
<td>choking</td>
<td>days</td>
</tr>
<tr>
<td>Marek's Disease</td>
<td>wasting, paralysis</td>
<td>weeks</td>
</tr>
<tr>
<td>Newcastle</td>
<td>colds, paralysis</td>
<td>days to weeks</td>
</tr>
<tr>
<td>Mycoplasmosis</td>
<td>decreased egg production, poor growth</td>
<td>hours to days</td>
</tr>
<tr>
<td>Salmonellosis</td>
<td>deaths soon after hatching</td>
<td>weeks</td>
</tr>
</tbody>
</table>

**Housecleaning Procedures**

Housecleaning is the most difficult phase of biosecurity because it requires a lot of work. Benefits include lower chick mortality, reduced stress, aids in bird disease defense mechanisms, and maximizing profitability. A complete cleanout of houses and replacement of new litter between flocks is highly recommended. The following procedures are recommended for a complete cleaning of poultry facilities:

1. Remove litter from poultry houses and store or spread a minimum of 100 metres from the house. Thoroughly sweep house from top to bottom. Washing and disinfecting are only effective when the litter, manure and dust have been thoroughly cleaned out.
2. Thoroughly clean all floors, lighting fixtures, fan blades, cages, and other permanently installed equipment with a good detergent and warm water (see Appendix A).
3. Remove, soak and scrub all removable equipment, such as feeders and waterers.
4. Thoroughly disinfect walls, cages, feeders, waterers and other equipment with a good disinfectant (see Appendix A) that is active against bacteria, viruses and mold.
5. When the floor is dry, apply 5 – 10 cm of clean, good quality absorbent litter (i.e. pine shavings, finely chopped straw).
6. Use an approved insecticide (see Appendix A) on top of new litter if insects are a problem. Do not mix insecticides and disinfectants together.

**Appendix A.** A list of detergents, disinfectants, pesticides and rodenticides approved for use in poultry facilities.

**DETERGENTS**

1. Biofoam
   - Alkaline cleaner
   - Suitable for the removal of organic and inorganic residues, particularly the build-up of scale
   - Excellent cleaning and degreasing properties
2. Biosolve
3. BioSentry Acid-a-Foam
   • Foaming acidic cleaner
   • Suitable for general purpose manual cleaning and wetting agent for house and wash-down
   • Removes mineral deposits and “biofilms”

4. BioSentry EZ-Kleen
   • Alkaline cleaner and deodorizer
   • Suitable for routine soaking and cleaning in preparation for disinfection
   • Emulsifies, suspends and removes grime, grease, protein and fatty soils

5. Proquat
   • Alkaline cleaner
   • Quaternary ammonium activity suitable for routine soaking and washing
   • Removes proteins and fatty soils

**DISINFECTANTS:**

1. Hyperox
   • Active Ingredients: 5% Peracetic Acid; 25% Hydrogen Peroxide
   • Broad spectrum activity – efficacy against bacteria, viruses and fungi
   • Environmentally friendly – completely biodegradable

2. Profilm
   • Active Ingredients: 19.2% 2-(Hydroxymethyl)-2-Nitro-1,3-Propanediol (HNP); 2.02% Formaldehyde; 2.29% Dimethyl benzyl ammonium chloride
   • Formaldehyde Fumigant concentrate
   • Broad spectrum activity – efficacy against bacteria, viruses and fungi

3. Virkon
   • Active Ingredients: 21.4% Potassium monopersulphate
   • Full spectrum activity - efficacy against bacteria, viruses and fungi
   • Non corrosive germicide

4. Virocid
   • Active Ingredients: 14.6% Alkyldimethylbenzylammoniumchloride; 10.7% didecyldimethylbenzlammoniumchloride; 7.8% glutaraldehyde; Full spectrum activity - efficacy against bacteria, viruses and fungi
   • Non corrosive disinfectant; 90% biodegradable

**PESTICIDES:**

1. Disvap Mec
   • Spray for Darkling beetle control

2. Ectiban 25
   • Residual surface spray to control flies and lice flies and lice

3. Dri-Kill Louse Powder
   • Control of lice on poultry and in poultry facilities

4. Debantic 50% W.P
   • Powder insecticide for control of darkling beetles, lice, ticks, flies and mites

**RODENTICIDES:**

- Alkaline cleaner
  - Ideal for the removal of grease, fats, faecal matter and soiling
1. Bait Stations
   a) Rats - Protecta LP Bait Station
      - Victor M9Rat Trap
   b) Mice - RTU Bait Station
      - Victor M7Mouse Trap

2. Rodenticides
   a) Ratak
   b) Ratoxin (Bromone)
   c) Terminator

Note:
The above list may not be exhaustive and does not imply endorsement by Shur-Gain of the efficacy of any product listed. Please consult your local Shur-Gain representative for a recommendation suitable for your facility and conditions.

Appendix B. Composting poultry mortalities on-farm (see attached PIC factsheet 150, 2005)