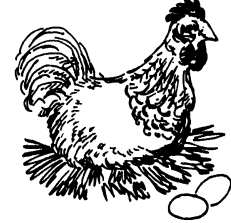




*The University of Georgia*  
**Cooperative Extension Service**

*College of Agricultural and Environmental Sciences / Athens, Georgia 30602-4356*

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## **COMMERCIAL EGG TIP . . .**

### **DEPOPULATION METHODS FOR A COMMERCIAL LAYER FLOCK: PART 1**

Avian influenza (AI) is a serious threat to poultry, and now the H5N1 AI virus is dangerous to humans as well. Eradication is considered to be the only viable solution to control the disease when it occurs. This generally means mass depopulation of flocks found to be positive for AI, and perhaps neighboring flocks as well. Various methods to depopulate flocks of poultry in emergency situations have been considered. Among these are cervical dislocation, water-based foam killing, poisoning with avicides, and gas killing. How viable are any of these methods for commercial caged layer flocks? A special problem of the commercial egg industry is that caged laying hens must be handled individually during removal.

**Cervical Dislocation.** This method requires each bird to be killed individually. Training and skill is necessary to kill birds humanely, and fatigue would be a problem if a person must kill a large number of birds in a day. A person fully dressed in personal protection equipment (PPE) could become overheated and be tempted to remove parts of it for the sake of comfort. The repetitious reaching into cages and handling of struggling hens would create abundant opportunities for protective suits to snag and tear on projections. Large numbers of people would be required to depopulate a house quickly. Hens produce strong, convulsive wing-flapping after cervical dislocation. Birds which are killed in rapid succession by this method are difficult to contain due to the violence of these convulsions and raise a lot of dust, which could be contaminated by AI virus. Cervical dislocation may be suitable for depopulation of small flocks in the absence of a better method, but is unlikely to be appropriate for commercial flocks. In Canada, a neck breaking device has been tested which helps remove human error from the killing procedure. The birds are carried from the house to the device.

**Water-Based Foam.** This method uses medium expansion water-based foam (similar to fire-fighting foam) to cover birds. The performance standards of the foam have been stipulated by the USDA-APHIS in the document, "USDA-APHIS Performance Standards for the Use of Water-Based Foam as a Method of Mass Depopulation of Domestic Poultry." The foam lodges in the trachea of a bird and prevents it from breathing. While it may not be possible to characterize foam killing as euthanasia, the method has features which make it very attractive for mass depopulation in situations where there is physical or biological danger to humans. Since the foam spreads well and builds up easily to depths above the height of poultry, a floor-housed flock can be quickly killed. Only one person must enter the house to operate the foam generator. This person does

#### **PUTTING KNOWLEDGE TO WORK**

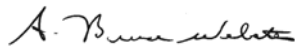
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not have to handle live birds and can finish the job with little threat to the integrity of PPE. The foam suppresses dust, and can be impregnated with antimicrobial agents. Unfortunately, the foam does not penetrate well into cages nor hold its consistency inside the cage, so the foam method does not appear be viable at this time for mass depopulation of commercial caged layer flocks. It may also be difficult to get medium expansion foam to build up on slats, particularly if these are raised above floor level, so the method may not be ideal for layer breeder houses or certain designs of cage free houses.

**Avicides.** An avicide is a poison that is more toxic to birds than to other vertebrate species, however, the substance may still be dangerous to non-avians. Conceivably, the best way to deliver an avicide would be through the water, but it might also be put into the feed. Uncontaminated water or feed would have to be cleared from drinker or feeder systems before an avicide could reach the flock. Extensive preparation of the house holding the flock would not otherwise be required. Relative to other methods, this approach would be slow because birds would have to consume enough poison to kill them. Hens having taken non-lethal doses might stop drinking or eating due to malaise from the effects of the avicide. A preliminary trial to evaluate a water-borne avicide for flock depopulation in another part of the world was reportedly less successful than hoped for, even when the flock was deprived of water before administration of the avicide. A flock with a disease necessitating depopulation may have many individuals off water or feed, making the timely delivery of an avicide impossible.

**Other Methods.** Electrocuting and high speed maceration have been tried in various parts of the world as methods for flock depopulation. Both require carrying live birds to the apparatus intended to kill them. These methods have the same problems regarding the amount of human labor and threat to integrity of PPE as do other methods which involve handling of individual birds. The feather cover of laying hens insulates the birds and makes it difficult to deliver a killing charge of electricity. As a result, the electrocution method can have many hens pass through the killing apparatus alive. Instantaneous maceration can be humane if conducted properly, but is esthetically displeasing to the public. It also creates potential to release bits of tissue, blood and bodily fluids into the environment around the macerator, and the mass of ground birds would have to be carefully managed to prevent spills or seepage. These problems make maceration problematic for AI control.

Of the mass depopulation methods considered so far, foam suffocation would be the best option for a floor-housed flock with no structures for hens to climb on to escape the foam. None of the methods are desirable to deal with an H5N1 AI outbreak in a caged layer flock. Part 2 of this series will discuss gas killing.



A. Bruce Webster  
Extension Poultry Specialist

**\*\*Consult with your poultry company representative before making management changes.\*\***

“Your local County Extension Agent is a source of more information on this subject”

#### **PUTTING KNOWLEDGE TO WORK**