

Cleaning and Disinfection in Pasture Based Poultry Management Systems

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Introduction

The goal of biosecurity is to keep diseases out of flocks. The steps of cleaning and then disinfection help to minimize the spread of disease between birds on a farm. The main purpose of cleaning and disinfection is to reduce the number of pathogens in the environment, thereby reducing the potential for diseases to occur in poultry flocks. The disease agents of most concern to pastured poultry producers are not unlike those that plague conventional poultry producers. They are viruses, bacteria, fungi, and parasites. Certain disinfectants are ineffective against certain pathogens so it is important to select a disinfectant that is effective against those pathogens that have infected your flock in the past, or are present within your region. But before you purchase a disinfectant, keep in mind that cleaning can remove 90% of the pathogens.

Cleaning

After you have temporarily relocated the flock, cleaning must be done first. Cleaning is the physical removal of organic material (i.e. dirt or fecal material) from the inside of poultry houses including floors, walls, and rafters. In order to effectively clean all parts of a pasture coop, you may need to also disassemble nest boxes, waterers, and feeders in preparation for cleaning. Organic material frequently inactivates or decreases the activity of disinfectants so it is important to be thorough in the cleaning step. Agents of disease are often lie protected within organic material and can survive the disinfection process. There are two main steps to cleaning: dry and wet. Dry cleaning involves the physical removal of organic material, such as the removal of feed, litter, and manure. During dry cleaning, all bedding, dust, and cobwebs should be removed.

Wet cleaning involves the use of water. The four steps in the wet cleaning process are soaking, washing, rinsing, and drying. Detergents, or soaps, can also be used in the wet cleaning process. If using a pressure washer, it is important to use 500-800 psi to ensure all the organic materials are removed. Wood, metal and concrete surfaces respond well to power washing or steam cleaning as the hot water, or steam, will inactivate most pathogens. If a pressure washer is unavailable, then all surfaces should be thoroughly scrubbed with a stiff bristled brush. Keep in mind that wet cleaning means that soapy water needs a place to go. Mud outside the coop door may result so a small piece of plywood may help you to prevent tracking in mud.

All wet areas should be dried quickly, so choose your cleaning day wisely. Choosing a rainy or high humidity day means that the excess moisture can allow bacteria to multiply. Improper cleaning can do more harm than good. Watch the weather report and try to choose a day that is warm or perhaps a little windy to help you dry out the coop after wet cleaning.

Disinfectants

Disinfection comes after cleaning and involves the use of a disinfectant that will reduce or kill the pathogens present. There are several types of disinfectants, and the one chosen should be effective against the target disease agents. Speak with your avian veterinarian or poultry lab diagnostician to get an understanding of what pathogens are in your area or what organisms you have had difficulty with in the past. Disinfectants used should be decided upon based on on-farm efficacy, cost, ease of use, and environmental friendliness. Most pastured poultry operations invest in a gallon of disinfectant and then store the remainder until it is needed at another time. Some disinfectants are approved by the United States Department of Agriculture for field use in the event of a certain disease outbreak. Pastured poultry producers should consider the risks of using disinfectants, the type of surfaces they will be disinfecting, the conditions under which the disinfectant will be used, and if they use a third party certifier that restricts the use of certain disinfectants (i.e. if you are transitioning to certified organic production).

The main types of disinfectants that can be used are aldehydes; chlorine-releasing agents; iodophors; phenols and bis-phenols; quaternary ammonium compounds; and peroxygens. No one product is best for all situations. A broad spectrum disinfectant that will be active against a wide spectrum of germs may be recommended for many small operations that are without a history of a specific disease. Examples of a wide spectrum disinfectant that are approved for use in poultry facilities are Tek-Trol®, 1-Stroke Environ®, Oxine®, Nolvasan®, and others. For pastured poultry producers who wish to also maintain organic flocks, disinfection options also exist in the form of chlorine, iodine, and hydrogen peroxide.

Be sure to research which disinfectant you wish to use thoroughly before making your purchase. Disinfectants must have sufficient contact time with the surfaces to allow them to kill the germs. The required contact time varies with the product and the germ so be sure to follow the label directions in order to achieve an adequate kill of microorganisms.

Many disinfectants are effective against bacteria, viruses, and fungi, but be sure to read the label to ensure that your broad spectrum disinfectant can do the job that you want it to do. Some pathogens are becoming resistant to disinfectants. These are spores, acid-fast bacteria, gram-negative bacteria, fungi, non-enveloped viruses, gram-positive bacteria and lipid enveloped viruses. Check with your avian veterinarian to see if you have had poultry health issues stemming from any of these organisms.

Factors affecting disinfectant effectiveness

Certain conditions can maximize the effectiveness of disinfectants. The presence of organic material can negatively affect disinfection. Other factors that can affect them are temperature, pH, and the use of soaps or detergents. Hard water can reduce or destroy the activity of some disinfectants. Certain water temperatures should be used for dilution to ensure optimal activity. Some disinfectants lose activity after being diluted so be sure to read and follow label directions. All disinfectants should be mixed by following the recommendations to avoid doing damage to different surfaces or equipment. Mixing double the dose of disinfectant may harm you, your equipment, and potentially your flock.

Conclusion

The purpose of cleaning and disinfecting is to prevent the spread of disease. Cleaning involves both wet and dry methods. The dry method is used to remove components such as bedding, manure, and dust. The wet method involves the use of soap and water. Power washing is a preferred method of wet cleaning. After cleaning, an area can be disinfected. There are many different disinfectants with varying degrees of effectiveness against pathogens so research should be done before purchasing a disinfectant. If these steps are skipped or done in a less-than-thorough manner, more harm can result than good.

This all may seem like a lot for the average pastured poultry operation and it is indeed an in-depth process to perform after every cold or illness. It is for these very same reasons that practicing good biosecurity is so important. Avoiding repeated episodes of cleaning and disinfection is a primary reason for putting together a good biosecurity program.

References

- Darre, Michael. "Raising Broiler Chickens." Almost Everything You Need To Know About Raising Broiler Chickens. University of Connecticut. Web. 4 May 2012. <<http://www.uvm.edu/newfarmer/production/livestock/Growing%20Broilers-Darre.pdf>>.
- Gordon, John, and Teresa Morishita. "Cleaning and Disinfection of Poultry Facilities." Veterinary Preventive Medicine. 2002. Web. 4 May 2012. <<http://ohioline.osu.edu/vme-fact/0013.html>>.
- Smith. "General Farm Biosecurity Practices." Healthy Farms - Healthy Agriculture. The University of Vermont, 2003. Web. 4 May 2012. <<http://www.uvm.edu/~ascibios/?Page=general.html&SM=submenugeneral.html>>.
- Snively, David W. "Biosecurity on the Farm." West Virginia University Extension Service. Web. 03 May 2012. <<http://www.wvu.edu/~agexten/Biosecurity/Farm.pdf>>.



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