Chick Master®

e-News

NOVEMBER 2005

Issue Number 3

"If there is a list of threats with a potential to inflict great economic losses to the commercial poultry industry, AI should be at the top of that list. The time has come for everyone involved in the production chain to take this threat seriously and act responsibly to stop AI in its tracks."

Ángel I. Salazar

PRACTICAL BIOSECURITY MEASURES TO HELP ENSURE AI PREVENTION.

Biosecurity could well be defined as a set of practices that help limit the spread of disease-causing organisms. Biosecurity should be an integral part of good management practice in any hatchery operation - and they usually are. However, when outbreaks like this one occur, we all need to step back and carefully review how things are actually being done. An effective biosecurity program should be easy to understand, flexible and open to new technologies as they develop or as it becomes necessary.

Routine biosecurity procedures in commercial poultry hatcheries should include the following:

A. Avoid utilizing manure contaminated eggs as hatching eggs. Remember--chicken manure provides an ideal environment for the AI virus to survive and spread. When field outbreaks of AI have been traced it has been found that intermittent usage of manure laden eggs for hatching purposes is one of the main suspects for the root cause of the problem.

B. Hatchery managers should refrain from visiting other hatcheries.

C. Keep outside visitors to an absolute minimum.

D. Provide footbaths or sanitary carpets soaked in disinfectant solution at all entry points into the hatchery premises at all times. Keep the solution fresh and replenish as needed.

E. If there is an option, chose a location for the hatchery that says "isolation". A hatchery building must be sufficiently isolated from many potential risks of infection. The hatchery premises must be designed and maintained to ensure that animals-such as rodents and wild birds-are unable to enter the building.

Example: An adjacent feed mill is a serious and constant threat to a poultry hatchery. A feed mill operation is like a magnet attracting pigeons, other wild birds as well as rodents, all of which are potential carriers of the AI virus.

In addition to birds and rodents you must also be concerned with mold spores as ever present contaminants of the hatchery's surrounding environment. Therefore, hatchery facilities should be located at least 1-2 miles away from other commercial or private poultry facilities.

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To Our Hatchery Friends:

Things continue to change rapidly in the world of hatchery operations at least as far as Chick Master is concerned!

The first installation of our new RollMaster II setters recently started up. We are processing the first of what we hope will be many orders for GeM control upgrades. Quotes have gone out for our new waterless hatcher system, new front and rear rebuilding kits for Jamesway setters, new environmental control management systems for hatchery rooms, and the first production model of our formaldehyde monitoring systems.

Hopefully our next issue will give you some insight into the concepts of our patent-pending system of heat recovery and energy conservation systems for hatcheries. We're putting the finishing touches on the article now.

Hope you find this issue entertaining and valuable. Please feel free to send us any constructive comments or criticisms. We can take it but we will admit that we do like comments better!

THREE IMPORTANT ELEMENTS OF AN EFFECTIVE BIOSECURITY PROGRAM

1

Real world, easy to implement biosecurity measures are important aspects to consider in hatchery design and daily management chores. These measures are required for obtaining maximum hatchability rates and for optimum chick quality as well.

2

Preventing contamination of hatching eggs, day-old chicks and turkey poults, particularly in the light of specific disease controls (e.g. those concerning Salmonella, Avian Influenza, et cetera, is becoming an increasingly relevant area in the operation of commercial poultry hatcheries).

3

Protection of the workforce from AI contamination is also a more important concern for all of us.

The Case For Single Stage Incubation Part 2

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THE CASE FOR SINGLE STAGE INCUBATION

PART II

When moving to the second half of the incubation cycle we find ourselves needing to dramatically change the environment. Since a large percentage of fertile eggs will come into this stage alive, the increase in heat and the demand for exhausting of CO_2 begins to rise at extreme rates. The oxygen requirement on day 18 is more than 7 times the level required on day 10. The CO_2 exhausted on day 18 is one-third higher than it was on day 15.

Clearly, the conditions are changing rapidly and the setter must be able to respond.

While these rapidly changing conditions are occurring, we must also remember that the egg needs desperately to rid itself of the water that we have thus far refused to let it shed. The old rule of weight loss 12% to 14% of original mass is no longer accepted as fact. We find that 10% is now a better rule for healthier, stronger chicks. (The one we call "The HOOCHO bird! Shown below.)

Knowing that is one thing accomplishing is still another!!

Removing moisture from the eggs seems like a relatively simple matter. And, in multi-stage, it really is an easy thing to do. If anything, the problem in multi-stage is to keep from removing too much. But, this is single stage. All of the eggs are getting very warm and large quantities of moisture are being exhausted from the eggs. That heavy, moisture-laden air needs to be removed from the setter. The fan system and the overall hatchery exhaust structure needs to able to move large quantities of this air. Moving it means *lifting it* since the air is removed from the top of the setters.

Even in a setter like the Avida getting the moisture out of the setter is not an easy task. If the supply air is relatively dry, the task of removal is simplified. If, on the other hand, the supply air is moist (as it is in most of the poultry producing areas), the task is magnified dramatically. In some cases, it is simply not possible with the old "10 days closed" rule of thumb for damper operation. In summer conditions in the warmer climates, the damper may need to begin opening as early as the 7th day of the incubation cycle. Chick Master has developed its own software to estimate the day and time when the damper should be allowed to open based on the conditions currently in the hatchery. While it can't forecast the weather, it can certainly help you to adjust to changing weather conditions. It is an essential tool in the proper management of a single-stage hatchery.

Special Note: *There are many ways to argue this issue. We subscribe to the theory that the amount of egg weight loss as water vapor is dependent upon the average egg weight of the batch being set. The air cell must be of a certain volume for successful hatching of course. If it's too small, the embryo will not be able to make the transition from passive diffusion respiration to pulmonary respiration. However, weight loss does NOT proceed at a constant rate throughout the incubation period in multistage nor does it need to do so in single stage. Thus, conditions can be adjusted so that egg weight loss in the period following the 4-10 days of relative "isolation" is increased to reach the desirable weight loss*

A6 Chick Master Single Stage Setter

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Routine hatchery biosecurity procedures

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F. Existing hatchery facilities cannot easily be moved. However, when planning an expansion, new hatcheries should be:

1) Located away from waterways used by migratory fowl, e.g., ducks and geese.

2) Located or built as far as possible from roadways handling high volumes of poultry vehicles such as feed and/or live haul trucks.

G. Chick trucks and/or buses should be washed and disinfected before entering the hatchery perimeter. Provide a separate building with proper drainage at the entrance of the hatchery to decontaminate all incoming vehicles and equipment. High pressure washing with detergent, as well as spraying of vehicle tires with disinfectant will eliminate most pathogens.

H. Design your hatchery with separation of major operations. Entry to the hatchery should be through a hygienic barrier, i.e., a tire disinfecting bath or reservoir for all incoming vehicles. Personnel should take a shower before entering the premises. Everyone should change from street clothes before entering your premises.

I. Make sure you have one-way work flow within the hatchery building. Personnel must always follow a route that will take them from "clean" areas to "contaminated" ones and not vice versa. Re-contamination should be prevented by prohibiting movement of equipment or hatchery personnel from "dirty" to "clean" areas.

J. Adequate ventilation of each room should also consider the principle stated above. *Example: Air should flow from clean areas to more contaminated ones and not the other way around*. Maintaining adequate room pressures is key in achieving this goal.

K. Routinely clean, wash and disinfect the hatchery premises. Use formaldehyde fumigation or an alternative method for disinfection of hatching eggs, automation equipment, conveyor belts, chick carousels, setters and hatchers.

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THE CASE FOR SINGLE STAGE INCUBATION PART II

objective by the end of the hatching cycle. Below a certain minimal range of loss causes an excessive amount of residual albumen inside the egg. An excessive weight loss will result in dead or lethargic embryos. The consequence of uniform embryo weight loss is a tighter hatch window and a stronger, less dehydrated chick. One certainly does not need staggering chicks with large abdomens sent to the grow-out farms! With the managed process of single stage, the egg weight loss is less, but the chick weight is significantly higher! HOOCHO once again!

Still, the eggs and the setter have to work strenuously to rid the eggs of that excess water. Humidity must be removed from the setter and cooling must run at an increasing frequency. Setters that have been designed for the multistage load cannot keep up to the pressure of this process. Airflow requirements are massive compared to the same number of eggs set in a multistage setter.

In order to adjust to varying air supply conditions, you should run your damper in the humidity control mode if such an option is open to you.

One of the other critical issues during the final days in the setter is cooling. In a hatchery with excellent air preparation, the high airflow through the setter will remove large amounts of heat.

Large, but not enough. Since all the eggs are of the same age, in the final days before moving to the hatchers huge amounts of heat are produced. Most of this heat needs to be removed. The embryo's tolerance for overheating decreases with age, so at a point it is most susceptible to damage from overheating,

Egg Wgt. grams	Desired wgt loss %	CO2 Thru day 9	CO2 After day10
66	10.7	0.6	0.33

Est. Wgt. Loss% at 18.5 day	10.61%	
Close the Damper for	6	Days
Room rh% =	50.03%	

CFM per 1000	req'd rh%		
0.5788	0.57389723	3.4123485	
Avg CFM	0.83301521		

DAY	CO_2 Level	air flow	10.707541
1	.0635	0.100	0.0003
2	.1094	0.100	0.0003
3	.2116	0.100	0.0003

A section of the CM Damper Opening Software.-
An essential tool in the proper management of a single-stage hatchery

the process is generating the most heat. The capacity of cooling available to the setter at this stage is critical. The setter needs to be able to move the heat to the cooling water and the chillers need to be able to handle the load!

One final important comment the heat being generated by these massed embryos is a valuable resource which in most hatcheries is allowed to become a liability. Even if you are in a warm climate, for most of the year your nighttime temperatures will require you to incur energy cost for warming the air to the 78-80 degrees that you need. Single stage can provide a huge bonus to you if you put in an efficient heat recovery system to remove heat energy from the setters containing older eggs and using it to warm the incoming air. Don't forget to look into this important aspect!!

Remember this may be a scientific process, but the successful and profitable setting and hatches of commercial poultry is an art. The best product is produced by the best artist. We don't know all the answers or even all the questions but we're working on finding them!

HOW IS THE "AI" VIRUS DISSEMINATED?

In our world, avian influenza viruses are usually spread by chicken manure. The virus lives quite comfortably for long periods of time in bird droppings and contaminated litter material. Other important routes for spreading the virus include contaminated equipment, vehicles, egg-flats, chickboxes, crates and personnel whose clothing and/or foot gear have been in contact with infected material, i.e., chicken manure.

Please contact us for any product or support information you may require

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Routine hatchery biosecurity procedures

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L. A routine program for monitoring microbial contamination levels within the hatchery is necessary. Good hygienic standards should be maintained in the hatchery through an approved sanitary program.

M. If at all possible, at any time the eggs in the hatchery should originate from one species of poultry only, and should be marked with the identification number of the breeder farm.

N. Any waste matter or refuse must be collected immediately and quickly removed from the hatchery appropriately. Flies and rodents which are attracted to waste are both real threats and important carriers of many poultry diseases.

O. Hatchery workers should not be employed simultaneously in poultry processing plants, markets, or in poultry-raising or handling operations.

P. Hatchery workers should not own any backyard poultry flocks, fighting cocks and the like.

Q. Sexing and vaccination of chicks should be performed in a special room equipped with a washbasin that provides hot and cold running water with the means to wash and disinfect hands. Instruments and equipment used should be disinfected before and after use. *Make sure the disinfectant dispenser never runs dry.*

R. All data and activities must be recorded daily in the hatchery register or activity log.

S. Baby chicks should be dispatched from the hatchery to the farm in new, closed containers of disposable type. If utilizing reusable, plastic chick boxes special emphasis and attention should be placed on proper wash and disinfection procedures in the hatchery for these boxes. Make sure the proper water temperatures and disinfectant ratios are respected!

T. Baby chicks leaving the hatchery should be transported in clean, disinfected vehicles, which are to be used exclusively for this purpose