



Cheeps & Chirps

..... Points for Poultry Profitability

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GETTING THE MOST FROM YOUR COOLING SYSTEM

Is your evaporative cooling system up to the challenges of summer temperatures? Those hot humid days are challenging not only to the birds but also to evaporative cooling systems as well. Evaporative systems are naturally limited in the amount of cooling they can provide by the humidity of the air, so it is those days of extreme heat and humidity when peak efficiency is most needed.

Inefficiencies and poor performance in the cooling system may not be noticeable until conditions become critical. Then, small problems begin to add up and prevent the cooling system from providing its full potential. Cooling performance can be reduced through direct effects from the pad & water system or from indirect effects on total ventilation airflow in the house.

The following are some items that could be reducing the effectiveness of your cooling system.

1. Dry areas or streaks on pads – Any dry area is just like a crack or an open door that lets hot air directly into the house. Plugged holes or nozzles in the water distribution system, inadequate water pressure, or reduced pump capacity are common sources of the problem. Clean filters regularly. Flush accumulated dirt, algae, and sludge out of the trough and header. Clean holes in the header with a small brush or wire. Replace clogged nozzles on spray pad systems.

2. Inadequate water supply – Water flow rates for a 6-inch re-circulating pad sys-

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COMPARING FOUR TYPES OF INCINERATORS

Dead animal disposal continues to be a challenge to poultry producers. Composting, incineration, burial, rendering and digestion are all methods of disposal that have been examined for use at poultry farms. Composting has been the dominant method for disposal of poultry carcasses for some time. The relative low cost for operation and maintenance has been the main advantage. Incinerators have always been an option but odor and cost of operation have traditionally limited their widespread use on poultry operations.

A new generation of incinerators has become available to poultry farmers. These new incinerators have been designed to increase efficiency of burn and to eliminate the need for an afterburner. Incinerators have the most potential for use on broiler breeder farms, due to the smaller volume of dead animals and

the enhanced requirement for biosecurity.

An on-farm trial was conducted to evaluate the energy efficiency of four different incinerators under field conditions at commercial broiler breeder farms. Four incinerators of similar capacity were obtained from 4 manufacturers. The incinerators were placed at four broiler breeder farms within a complex. All incinerators were set up to operate on propane gas. The weight and number of dead animals and culled eggs incinerated and fuel usage was recorded daily at each farm over a 6-week period.

Wide variations in efficiency were observed for the four incinerators. The least efficient incinerator was able to operate at only 11.8 lbs (5.4 kg) of birds and eggs per gallon of propane. The most efficient incinerator operated at 57.6

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INCINERATOR COMPARISONS continued

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lbs (26.2 kg)/gallon of propane. The other two incinerators operated at 20 lbs (9.1 kg) and 26.9 lbs (12.25 kg)/gallon of propane.

While incinerator design is important, other factors also influence the overall efficiency of the incinerator. Factors influencing the efficiency of the incinerators were:

- * duration of run time
- * ratio of birds to egg material
- * total poundage per burn

Producers can improve the efficiency of their incinerators by incinerating full loads and following manufacturer's recommendations.

Both the initial cost and the operational cost need to be evaluated to determine the ultimate cost of dead animal disposal. Incinerators can be a viable alternative for dead animal disposal.

Incinerators and the manufactures contact information of the incinerators used in the study are listed below:

Load and Lock Cremator 500
Earth Smart Solutions
Lindale, TX

SB 500
SuperNova Manufacturing
Camilla, GA

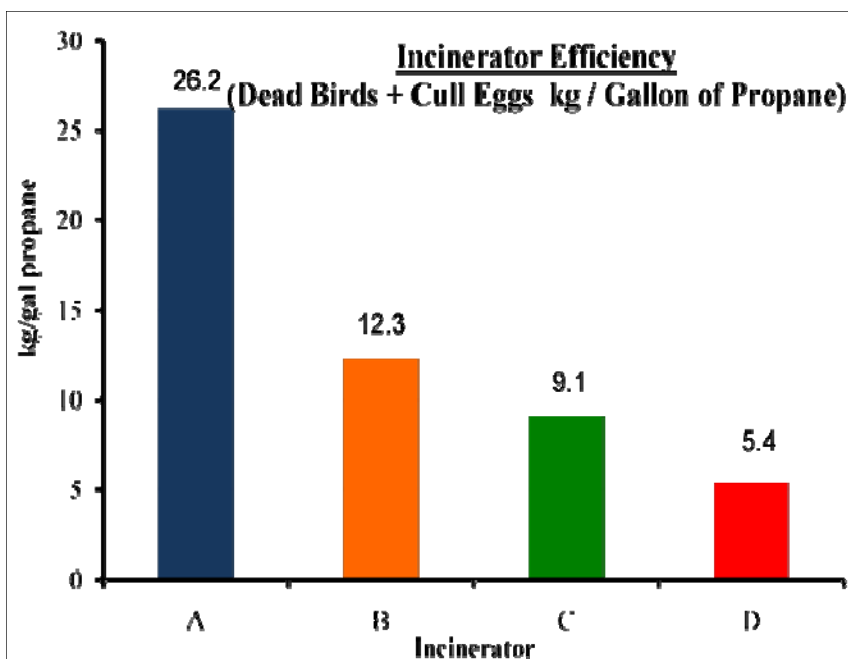
Destructor
National Incinerator Incorporated
Boaz, AL

Shenandoah A200
Agile Mfg / CTB
Anderson, MO

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GETTING THE MOST FROM YOUR COOLING SYSTEM

tem should be about 0.75 gallons per minute (gpm) for each foot of pad length. One way to gauge adequate water flow is to place your hand on the outside of the pad. Water should flow off your hand in a small stream. Clogged filters or pumps and undersized lines are common restrictions to water flow. Re-circulating pumps have limited pressure capability and pumping capacity is quickly reduced when dirt and sludge accumulates in the system.

3. **Holes or gaps in the pads** – Common causes are rodent, bird, or mechanical damage; gaps between pad sections; and sagging pads with gaps at the top. Hot air bypasses the pads through those openings and enters the house without being cooled.

4. **Insufficient bleed off or flushing** – When water evaporates from the pad, minerals are left behind and can accumulate to the point that they begin to block airflow through the pad. Crust formations may also damage the pad material. Manufacturers recommend either a continuous water bleed-off (about 1 gal/hr per foot of pad length) or draining and refilling the system once per week.

5. **Clogged, dirty, or crusted pads** – Anything that blocks the pad air channels will choke and reduce airflow through the pads. Reduced airflow leads to two problems inside the house. A 10% reduction in total airflow means a corresponding 10% reduction in airspeed through the house. It also causes a 10% increase in the temperature rise between the tunnel air inlet and the exhaust fans.

6. **Poor performing fans** – Worn belts and/or motor pulleys, dirt, malfunctioning shutters, and damaged blades will reduce airflow through the barn. While this does not specifically reduce cooling through the evaporative pads, it does reduce airspeed through the house. Since evaporative cooling creates a high humidity inside the house, maintaining adequate airspeed across the birds is a critically important part of the overall cooling system (see item 5).

7. **Elevated static pressure** – Undersized pads or restrictions (dirt or other blockages) in the pads increase the operating static pressure in the house. Fans work harder (use more energy) and move less air as the static pressure goes up. Airspeed through the barn is also reduced as the fan capacity decreases. For some typical fans, increasing the static pressure from 0.10 to 0.15 inches of water reduces the airflow capacity by about 7 to 10%. However, the effect can be much larger for below average or poor performing fans.

8. **Air leakage in the house** – Air leaks allow hot air to enter the house and reheat the air that has been cooled through the evaporative cooling pads. Air leaks from the attic are particularly damaging, as air temperature in the attic is often near 140°F. Close attic air inlets if any are installed. Repair damaged areas in the ceiling and seal as many other areas of air leakage as possible.

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Avoid these practices:

1. Blowing grass clippings, dust or trash into the pads
2. Using a high pressure washer to clean the pads
3. Using chlorine or bromine cleaners (use only manufacturer's approved cleaners)
4. Operating the system without filters
5. Operating the system around the clock (pads must dry at least once per day)
6. Enlarging holes in the water distribution pipe
7. Allowing pH of water to be below 6 or above 8



Clogged pads reduce air speed and increase temperatures in the house.



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FARM LIFE IS HEALTHY FOR KIDS

Asthma in children has doubled in the past 30 years. This is thought to be due to the urbanization of families. A recent article in the New England Journal of Medicine reports that kids who grow up on traditional farms are 30-50% less likely than other children to develop asthma. While the fresh air is good for them, it is the germs they encounter that help to reduce the incidence of asthma.

Farm life exposes children to a greater variety of germs and fungi (from the animals) than city life. Taking kids from the suburbs on the occasional field trip to the country or petting zoo is not enough to develop a strong immune system. The kind of dust found in suburban and urban homes is very different from that found on farms.



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