



REDUCING ENERGY COSTS IN POULTRY HOUSES

Rapid increases in the cost of fuel has forced broiler producers to reassess their energy conservation practices. Most of the energy used in poultry production is used for brooding and adverse weather conditions can favor survival needs before productivity. Growth rate declines while feed consumption rises. Respiratory disease problems are more prevalent because of reduced air quality and utility costs increase, even while the grower attempts to maintain comfortable house conditions. These management tips are proposed as suggestions or points to consider when evaluating energy programs. These tips can help producers lower energy usage and costs.

Insulate Houses. Keep the poultry house and equipment in a good state of repair and modify, if necessary, to prevent excessive heat losses. Insulate poultry houses to provide a minimum thermal resistance (R-value) of R-12 in the ceiling and R-8 in exposed walls. Replace or repair insulation damaged or destroyed by birds, rodents, and insects.

Vapor Barrier. The R-value of most insulation materials decreases drastically when moistened. Installing a vapor barrier on the insulation's warm side protects against moisture saturation. Seal tears and damage to exposed vapor barriers.

Stop Air Leaks. Eliminate drafts by sealing air leaks and wall cracks. Uncaulked sill plates are the most common source of uncontrolled air entry. Seal cracks with expanding polyurethane foam. A 1/8-inch crack along both sides of a 500-ft house is equivalent to more than 10 sq ft of open wall or leaving uncovered a 2-ft section of sidewall.

Seal Curtains. Repair all curtain holes and eliminate cracks between the curtains and house. Curtains must fit close to the wall and cover the entire sidewall opening. Seal bottoms of curtains with a tack-strip. Install pocket flaps over the tops and ends of curtains to reduce uncontrolled air entry. Cracks around the curtains also reduce the ability to control ventilation.

Weatherstrip Openings. Thoroughly weather-strip all door openings against air entry when doors are closed.

Maintain Control Devices. Clean and check timers and thermostats for accuracy. If they cannot be adjusted or repaired, replace them. Usually, a thorough cleaning is all that is necessary to restore function of the devices.

Control Water Wastage. Reduce litter moisture by properly ventilating. Repair leaks in waterers and water lines. Leaking water systems require additional heat to evaporate spilled water. Check the pressure regulator and filters for cleanliness and proper adjustment.

Ventilate Properly. Adjust ventilation so it coincides with the needs of the birds and house conditions. There is no need to over-ventilate, but be on the alert for any sign of stress that needs immediate attention. Excess litter moisture in the house requires valuable energy for moisture evaporation and removal.

Eliminate Temperature Layers. Uncirculated air stratifies into temperature layers with the warmer air near the ceiling and cooler air near the floor. Higher ceilings allow greater temperature variation between floor and ceiling. Use mixing fans to circulate air and maintain a more uniform temperature at all levels. This mixing improves energy utilization by moving warm air to the birds' level.

Timely Ventilation. Increasing ventilation rate is often necessary to control house and litter moisture. This should only be done only during the warmest periods of the day. Moisture evaporation increases dramatically as the house temperature increases.

Maintain Equipment. Clean fans and shutters frequently. After cleaning fans and shutters, lubricate motor and pivot joints. Clean shutters that allow unwanted air entry should be replaced. Cover and seal all unused fan openings with plastic sheeting or curtain material.

Fan Replacement. When replacing poultry house fans, select the most efficient fans suited for your needs. Consider maintenance and service items, such as totally enclosed motors, direct drive fans, noise factor, motor overload protection, low motor starting current, and ease of maintaining/cleaning the blades and shutters. It is advisable that a replacement fan motor always be available.

Brood Properly. Closely follow your company's recommended partial-house brooding program, especially during the first three weeks. Always brood the maximum number of chicks for the equipment being used.

More Frequent Temperature Reductions. After establishing the appropriate starting temperature, reduce the temperature in 2 to 3 degree F. steps at three to four days intervals rather than weekly 5 degree F. reductions. More frequent reductions provides comfortable conditions without over-brooding and wasting energy.

Brooder Maintenance. Adopt a good brooder maintenance program. A sooty brooder indicates improperly burning of fuel that wastes gas and gives off excess carbon monoxide. Keep the burner orifices clean. Use the proper size reaming needle to avoid altering the orifice size and wasting fuel. It is wise to have spare thermocouples, valves, and other parts in case of emergency repair jobs.

Heater Pilot Lights. Adjust the pilot lights to manufacturers specifications. Shut off one-half the brooder pilot lights when they are not needed. In cold weather, the lit brooders provide heat until unlit brooders can be reignited.

Gas Leaks. Check each brooder for gas leaks before and during each brood of chicks. Prevent gas leaks by using special gas hoses recommended for brooders. Apply a solution of soap and water to all connections using a paint brush. Air bubbles indicate gas leakage. For safety, do not test for gas leaks with an open flame.

Proper Gas Line Pressure. Maintain a uniform gas line pressure as specified by equipment manufacturers or your gas company. Reduced gas line pressure causes burners to malfunction. Test the pressure at each burner only after all burners are burning. More than one size of gas line may be required to maintain the required pressure at all heaters. Fully open all valves when gas is in use.

Gas Safety. Do not, under any circumstance, make adjustments to the regulator on the gas tanks. Notify the gas company and have them check the regulator.

Lower Light Intensity. In most poultry houses, more lights are used than are needed. Broilers perform well when only enough light is available to find feed and water. One-half foot candle of light is adequate in most cases. Reduce electrical usage by using bulbs with lower wattage, regular use of switches and dimmers to reduce light intensity, and changing to a more efficient light source.

Increase Light Efficiency. Clean the light bulbs frequently and replace dim bulbs with more energy efficient bulbs. Light reflectors on fixtures can double the amount of light that reaches the birds and reduce lighting costs by one-half.

The importance of energy conservation cannot be overstressed. A few energy saving tips have been presented, but this program cannot be successful unless accurate energy consumption records are kept. Read and record electric, gas, gasoline, and diesel fuel meters every month. If you have no meters, record the amount of fuel purchased; use bills as a reference. Comparing monthly fuel consumption data reflects the success of an energy conservation program.

Serving the Poultry Industry of Mississippi

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