



# Poultry Patter

AGRICULTURAL EXTENSION SERVICE • INSTITUTE OF AGRICULTURE  
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## POULTRY HOUSE ENVIRONMENT

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Today's egg producer is confronted with so many theories, ideas, and sales programs regarding housing for laying flocks that he may be thoroughly confused. To properly evaluate these ideas and programs, we should review some basic principles.

A good poultry house environment is one which relieves the birds of all possible stress in our ever-changing weather conditions. The three critical factors in environment are: insulation, ventilation, and temperature.

### Insulation

Insulation restricts the flow of heat from a warm surface to a cooler surface. All materials have some insulation value, so the term "an insulated house" is almost meaningless. The effectiveness of an insulation material is based on the number of BTU's per hour that will pass through 1 square foot with a 1-degree difference in temperature between the two sides. This measure is called the U value. The smaller the U value, the more effective the insulation. A value of 0.06 or less is desirable.

It is important to keep moisture out of the insulation. Most materials lose their insulating value and often break down when wet. Therefore, a vapor barrier on the inside wall is necessary. Seams, cracks, and joints must be sealed to prevent moisture from getting into the insulation. Insulating a house without using a good vapor barrier accomplishes little.

Moisture in the form of vapor is always present in a laying house. A 4-pound Leghorn hen laying at 65 percent production gives off 865 BTU's per day in a house held at 55°F. This same hen gives off 0.61 pounds or 4,270 grains of moisture. This means that 4.9 grains of moisture are produced for every BTU of heat given off.

### Ventilation

An ideal ventilation system would take all moisture out of the house. This is impossible in our Minnesota winters unless supplementary heat is added, because the chicken does not produce enough heat to permit this amount of ventilation.

According to Hajime Ota, USDA engineer, the minimum ventilation design should remove at least the moisture expired by the chicken through respiration. The litter and droppings must absorb and hold moisture given off in the feces during our cold spells.

The following pointers may help you solve the moisture problem:

1. Increasing litter depth makes possible storage of more moisture during cold weather for later release during a warm spell.
2. Removal of the droppings by use of mechanical pit cleaners disposes of 95 to 100 pounds of moisture per day per 1,000 chickens.
3. Heat from any source is helpful; sources include: light bulbs, motors, bacteria action in built-up litter, and solar heat through the south windows.
4. In a wide house more heat is available for ventilation, because there is less exposed wall area per bird for heat loss than in a narrow house.

5. During cold weather it is desirable to ventilate more during the day and less at night. During the day the birds are active, and a slightly cooler house will not bother them. Outside humidity is usually lower and the air is warmer during the day. This aids in removal of excess moisture.

### Temperature

There is no magic temperature at which each house must be operated. It is generally agreed that 55°F. is a good temperature to maintain if you have enough ventilation to eliminate the moisture. It may be necessary to gradually drop this temperature as low as 40°F. during the cold months to control the moisture problem. During early spring this temperature can be adjusted up again.

In many houses the best solution is supplementary heat. This heat can be added by a variety of methods at very little cost. Increasing bird density adds units of heat within the building but cuts down on floor area and litter for holding moisture from droppings. This can be partially corrected by increasing litter depth.

### Information Available

For further information on housing write to Robert W. Berg, Extension Poultry

Specialist, Institute of Agriculture, University of Minnesota, St. Paul, Minnesota 55101. Ask for Poultry Fact Sheet No. 5, "Poultry House Construction" or Extension Bulletin 253, Insulation and Ventilation of Animal Shelters.

### OUTLOOK FOR 1964

The Poultry Survey Committee of American Feed Manufacturers Association reports that returns to egg producers in the 12 months beginning October 1963 will be lower than the laying year just ending. The average egg price is expected to be \$0.01 to \$0.02 a dozen less than in the previous year and feed prices may average somewhat higher.

### EGG COOKING CONTEST

Again PENB Minnesota will have an egg cooking contest. The contest opens March 1 and closes April 15, 1964. Now is the time to stimulate your friends and neighbors to develop and perfect their favorite egg recipes. Each recipe must contain one egg per serving. These practice sessions will stimulate the use of a lot of eggs. You must take the lead in your community. Talk up the contest and you will increase the consumption of eggs. This may be the key to better prices. Watch for further information.



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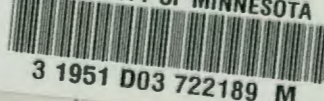
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