

## University of Missouri Extension

G1170, Reviewed October 1993

# Proper Infrared Heat Lamp Use for Efficient Livestock Production

**Joseph M. Zulovich**

**Department of Agricultural Engineering**

Electric heat lamps provide a versatile, inexpensive heat source for today's livestock production farming practices.

Heat rays from infrared lamps pass through the air without heating it, as does energy from the sun. When these rays strike an animal, heat energy is absorbed. Using this radiant heat principle, lamps mounted at the proper height establish "comfort" zones where young animals can move about and seek the degree of warmth desired.

In spite of advances in quartz-tube heaters and cable-heat applications, many livestock and poultry producers continue to use the 250-watt lamp because of its low first cost, reasonable operating cost, ease of installation and minimal storage space. While its main use on Missouri farms is for brooding baby animals, the same units can be used for drying paint, warming the shop, milk parlor comfort and a host of other uses.

## Heat lamps for brooding pigs

Experience and research have shown that infrared heat lamps can save an average of 1-1/2 more pigs per litter by preventing chilling, which so often occurs soon after birth during winter months. Many Missouri farmers are using this equipment because heat lamp brooding units are simple to install and have a long life, about 5,000 hours. Being portable, they have many other uses as well.

The first 12 to 24 hours after birth are a critical time for newborn animals, especially pigs. During this period, it is often desirable to use two 250-watt heat lamps — one over the farrowing area and one over the nursing area. After 24 hours, one lamp can be moved to provide a warm resting area in the partitioned stall area; or, if desired, over a partitioned corner.

## Types of lamps

Two types of infrared lamps are available — soft glass and hard glass (Pyrex). While more expensive, the latter is preferred because of its greater resistance to moisture damage.

Heat lamps are made with clear or red glass bowl. Red bowl lamps eliminate glare by reducing the visible light output. (Limit use of soft glass lamps

to dry locations where protection from weather and moisture is not an important factor.) All lamps have built-in reflectors. Either type of lamp can be used in single lamp fixtures or in one of several types of multiple lamp fixtures most often used for chick brooding.

Like any other farm production tool, the heat lamp and its allied equipment must be handled properly to ensure their safe use. Unless certain rules are followed, fire insurance coverage may be adversely affected. Three major areas of concern are selection of proper equipment, suspension of the lamp at proper height above animals to be brooded, and proper installation of the correct type of wiring with adequate fusing of each electrical circuit. Specific recommendations are shown below.

## Brooding equipment

The brooding unit should incorporate the following:

1. A chain, wire, rope, or bracket by which the unit can be securely suspended. Do not use the electric cord to support the unit.
2. A heavy-duty appliance cord with current-carrying conductors of not less than number 18 AWG wire (for a single 250-watt lamp) and not longer than 8 feet. An asbestos-insulated, rubber-jacketed cord known as type "HSJ" is recommended. Cord length should be adjusted so that it will become disconnected if the unit should fall.
3. A keyless porcelain lamp receptacle. The ordinary brass receptacle will not safely withstand the high temperature of the bulb.
4. A metal reflector shield or guard to protect lamps from moisture damage or mechanical injury.
5. A bail for tipping fallen lamps away from bedding.

## Heat lamp suspension

Use the following minimum dimensions in suspending heat lamps:

1. 30 inches above the bedding or 6 inches above the standing animal (whichever distance is greater) when used over the sow at farrowing time.
2. 24 inches above the bedding when used over the pigs in a protected area. The sow-pig barrier should be of rigid construction with both lamp and cord out of sow's reach.
3. 18 inches above the litter when used for brooding baby chicks.
4. Six inches higher than the animal can reach when used for calves, lambs, etc. For lambs, it may be necessary to increase this distance to prevent skin damage as the wool prevents the escape of heat. The ewe should be fenced away from the heating unit but not separated from the lambs.

Do not confine animals in too small an area under heat lamps. When brooding chicks, use a heavy cardboard guard to prevent floor drafts and to keep chicks from straying too far from the heated area.

## Wiring recommendations

Install electrical service entrance equipment in all permanent buildings where infrared brooding equipment is used. Edison-base fuses are usually preferred. Be sure it has adequate current and circuit capacity. (A 20-circuit, 115-230 volt, 100-ampere service entrance box should be minimum for most farm buildings.) Locate this service entrance panel in a dry location and clearly mark each circuit.

Install all circuits serving heat lamps with permanent type wiring and construction. Use non-metallic-sheathed cable with neoprene or other acid-resistant covering.

Locate electric receptacles within 6 feet of each brooder unit but out of animal reach. Ceiling mounting of such outlet boxes is most desirable. Use only grounded-type receptacles.

Use number 12 AWG copper wire (or larger) for heat lamp circuit conductors.

For number 12 wire circuits, use a 20-ampere fuse. This should be of Type S, tamper-resistant, dual-element and time delay. **Do not use a larger size.** Limit the number of 250-watt lamps used to seven per number 12 wire circuit.

Be sure to have all electrical wiring and equipment installed by a competent electrician in accordance with good wiring practice, the National Electrical Code, and local requirements which might prevail.

G1170, reviewed October 1993

## Related MU Extension publications

- G2500, Care of Pigs From Farrowing to Weaning  
<http://extension.missouri.edu/publications/DisplayPub.aspx?P=G2500>
- G8351, Small Flock Series: Brooding and Growing Chicks  
<http://extension.missouri.edu/publications/DisplayPub.aspx?P=G8351>
- G8920, Brooding and Rearing Ducklings and Goslings  
<http://extension.missouri.edu/publications/DisplayPub.aspx?P=G8920>

Order publications online at <http://extension.missouri.edu/explore/shop/> or call toll-free 800-292-0969.



■ Issued in furtherance of the Cooperative Extension Work Acts of May 8 and June 30, 1914, in cooperation with the United States Department of Agriculture. Director, Cooperative Extension, University of Missouri, Columbia, MO 65211  
■ an equal opportunity/ADA institution ■ 573-882-7216 ■ [extension.missouri.edu](http://extension.missouri.edu)