

Ministry of Food Production
Extension Training and Information Services Division
FACT SHEET

TT:Ag Ext: 00:15

by: Usam Stephen, Agricultural Officer I

Managing Heat Stress In Broiler Production System

INTRODUCTION

All types of livestock experience heat stress. This happens when the relative humidity and temperature of their surroundings are high.

Comfortable temperatures for poultry range from 35°C at hatching to approximately 24°C at four weeks of age. Heavy and/or fast growing broiler breeds can suffer from heat stress as they mature.

Heat stress may cause the birds to suffer from heart failure, liver shock and eventually death, due to weakened body functions at this time. Heat stress reduces broiler production.

Heat stress occurs during the hottest hours of the day and vary during the wet and dry seasons. If the animals are not properly managed to prevent heat stress during these times, they can die.

MANAGEMENT OPTIONS

To reduce heat stress, the farmer should:

- have adequate facilities;
- manage feed and water supply;
- stock poultry as recommended.

Adequate Facilities:

Adequate housing facilities must have:

- proper orientation;
 - roof design to encourage air flow; and
 - proper ventilation.
- house design
- width not more than 9 metres (30 ft.)
 - height 4 metres (12 ft.)
 - centre of pen 5 metres (15 ft.)

◆ Orientation

Build the poultry pen to run in an east-west direction and with enough eave allowance of at least 1.25 m (4 ft.) to keep out direct sunlight.

◆ Roof Design

Design the roof to allow the rising hot air to escape easily. Use either the pagoda (figure 1) or jack- type (figure 2) design. The space in the roof should be at least 0.3 metres (1 ft). The space on the Jack Roof should always be on the Leeward side.

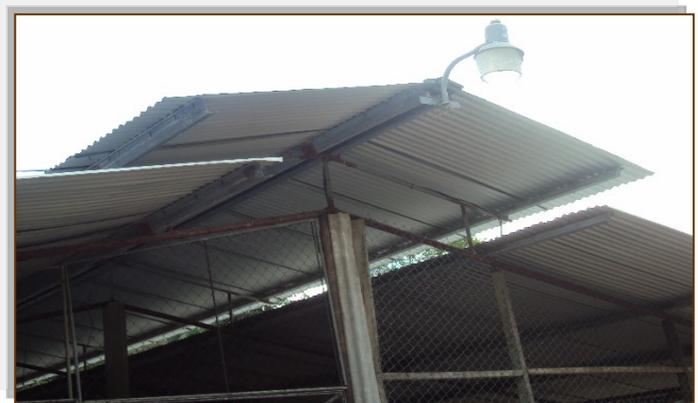


Figure 1. Pagoda roof



Figure 2. Jack roof

- Whitewash the roof or paint it white. Use a whitewash formula of 9.1 kg hydrated lime with 19 litres of water and 1 litre of polyvinyl acetate. Whitewashing the roof will lower the temperature by as much as 8°C on a hot day and can last for approximately 2 years.

♦ Ventilation

- Ensure that air can pass through the pen freely.
- Place fans to allow air movement throughout the pen, where natural ventilation is inadequate. Fans should always be angled at the level of the birds.
- Remove all obstructions around the pen e.g., tall grasses, trees and other buildings. However, low grass cover around the pen will reduce the amount of reflected light and heat entering the pen; the pen environment is cooler as a result.
- Do not pave the roads that run near to the building. Paved roads will absorb heat, which can be easily blown into the pen. If roads are absolutely necessary, use light coloured material which will not absorb heat, e.g., gravel.

Feed and Water Management:

Animals eat less feed and drink less water under conditions of heat stress. This will reduce their performance.

♦ Feed Management

During periods of heat stress, feed in the late evening and night. Do not feed the birds during the daytime.

Heat stress is most severe from 10:00 a.m. to 5:00 p.m. Withdraw feed from the birds at least four to six hours before heat stress periods in the day. Removing feed after the signs of heat stress has little value.

♦ Water Management

- Provide a constant supply of cool, clean water for the birds. Birds will be more inclined to drink cool water than warm water.
- Cover and shade all water tanks to ensure that the water is cool. The water tanks can also be painted white to help keep the water cool. If the tanks are not shaded, cool down the water with blocks of ice.
- Do not run water lines along the roof since the water going to the waterers will be heated up. It has been shown that on hot days the temperatures on the roof of poultry houses can be as high as 82° C, if the roof is not insulated.
- Adjust waterers to an easy-to-reach height and increase the depth of water in the waterers to make drinking easier.
- Vitamins and electrolytes can be put in the water to help the birds cope with the heat. Lemon juice can also be added to the drinking water as the added Vitamin C helps the birds cope with the hot conditions.
- Slowly walk through the pen to encourage the birds to move about during periods of heat stress. This will encourage them to drink more water, which will assist in cooling them down.

Stocking:

Provide a space of 0.12 m² (1 ¼ ft²) per broiler. If the pen is poorly ventilated, provide more space per growing bird during the hot periods. The birds will be cooler, fewer birds will die and overall production will be better.

For further information and advice contact your Extension Officer

"All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, transmitted in any form, or by any means reproduced without permission in writing, of the Ministry of Food Production."

*Published and Printed by
The Extension Training and Information Services Division
Technical Content reviewed by the Animal Production and Health Division
Ministry of Food Production
Trinidad and Tobago
First published as "How to get the Best Poultry Production during times of Heat Stress"
August 2001
Revised April 2014*