



The “Awudu heater” : An appropriate solution to thermal environmental control for poultry farmers



I. Introduction

Brooding of chicks and keets is an important aspect of poultry rearing and proper brooding will result in healthy growers. In most rural areas in Ghana, there is always shortage of electricity and frequent power failure leading to improper brooding and thereby increasing post-hatch mortality rate. To overcome these problems, an appropriate technology based on locally available resources, simple in design and construction, easy to operate, affordable and reliable has to be developed which a farmer can adopt easily. The “Awudu heater” has therefore been introduced to help rural farmers handle brooder house thermal environmental requirements and has been widely adopted by most poultry farmers in the country. The study was therefore aimed at evaluating this alternative indigenous method of brooding, as it applied to rural environment and results compared with that of LPG, electric bulb and kerosene heating systems.

II. Methodology

The study was conducted in June, 2010 at the Nyankpala campus of the University for Development Studies poultry farm. The heater was tested in an enclosure 2.5mx1.5mx2.5m. Plate 1 depicts the main components of the “Awudu heater” and a complete setup of the experiment. Temperatures were measured at distances of 3, 6, and 10 cm respectively from ground level and at radial distance intervals of 20cm from the heater. The same set-up was used for the LPG, electric bulb and the kerosene power heaters. All readings were recorded at 15 minutes interval for a period of 24 hours for one week for all the experiments. The quantity of charcoal used to brood was also measured with respect to time.



Plate 1: A- a perforated pot with gauze, B-a lid to the perforated pot, C- clay basin filled with pebbles and clay pot filled with 500g of charcoal , D and E-a fully set-up of the “Awudu” heater,

III. Major Findings

Comparative performance of the “Awudu heater” with that of LPG, electric bulb and kerosene are shown in figure 1A,B,C,D,E and F. The results showed that 500g of charcoal maintains a minimum average temperature of 37°C for a period of 12 hours (daytime) and 35°C for a period of 12 hours (nighttime) on measured distance 3 and 6cm respectively. Minimum average temperature of as low as 25°C was recorded for measurements 10cm above the ground .

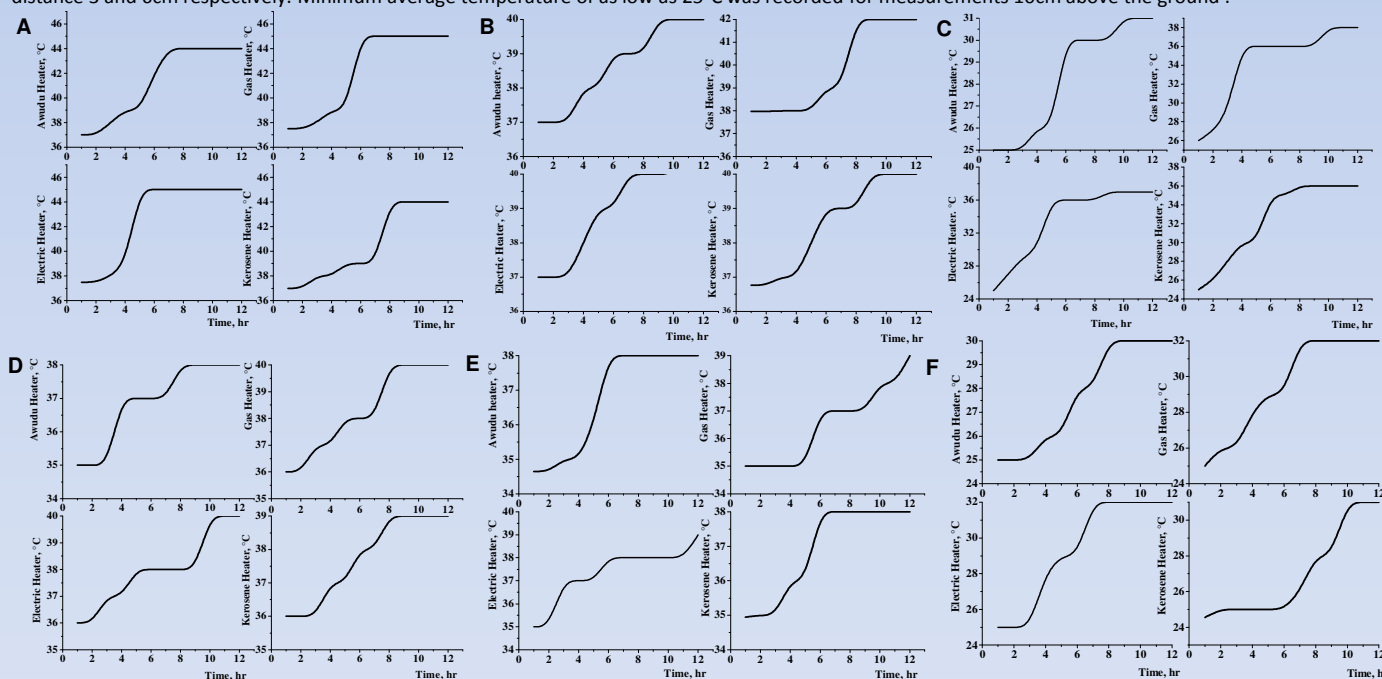


Figure 1: Variation of daytime temperature at 3, 6 and 10cm for A,B and C and nighttime temperature at 3, 6, and 10cm for D,E and F respectively from ground level for radial distance 20cm

III. Conclusions

Being equally efficient to LPG, electric and kerosene heaters, the “Awudu heater” is a simple indigenous contrivance adopted by individual farmers as well as farmers adapted by Animal Research Institute (ARI), the German International Cooperation (GIZ) and New Energy—a local NGO in the Northern region of Ghana. As compared to kerosene, LPG and electric heating, the “Awudu Heater” is found to be 5 times, 15 times and 10 times cheaper respectively. It is also evident from the study that with the scarcity of electricity as well as high price of LPG and kerosene, small scale poultry farmers may flourish in these areas with this alternative method of brooding since optimum brooding temperatures are achievable.

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