

The impact of high temperatures on the productive performance (behavioral, physiological, and immunological) of poultry

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Abstract: The poultry sector produces chicken meat and eggs, which are the most significant protein sources among livestock foods. The industry is dealing with the effects of climate change, which is creating heat stress and negatively influencing poultry performance and well-being. Heat stress has been the most significant climatic stress confronting the worldwide poultry business, with birds having just a small temperature range when stressed. The purpose of this paper is to determine the effect of heat stress on the performance and well-being of hens. The study examined the research articles of numerous researchers and discovered that high temperature influences poultry performance, nutrition, and health. High temperature decreases feed efficiency, body weight, feed intake, and egg production while increasing the proportion of mortality and the incidence of pathological injuries in poultry fields, which generate major material losses.

Keywords: high temperatures, productive performance, poultry, heat stress.

Introduction

Heat is one of the most important environmental factors that affect the life of poultry and its productive performance during the breeding period, as poultry are warm-blooded animals with a constant temperature; that is, They possess the capability to keep their internal body temperature within a consistent range physiologically constant through thermal equilibrium (Nagy, 2004), where chickens produce heat, moisture, and carbon dioxide as products of natural activities. In addition, because it has a special temperature-regulating device called the Thermo Regulation System, which controls its effectiveness and regulates the functioning of the hypothalamus (Donald and William, 2002), this device is responsible for regulating body temperature. Thus, the bird is able to maintain her body temperature at a constant level. This equilibrium is based on the heat exchange between the bird's body and the surrounding medium. To regulate the body temperature and keep it constant, the bird's body performs some physical or chemical processes in order to adapt to the external atmosphere. The physical activities include heat loss through radiation if the ambient temperature rises, and they may resort to carrying out device operations where heat is lost through the loss of water vapor through the breathing process. The chemical temperature of the body in chickens is between 40 and 42.8. The body can experience heat loss for multiple reasons, such as a decrease in ambient air temperature, increased wind flow around the body, a lower temperature in the environment, and higher humidity levels. Heat loss also decreases when the ambient temperature rises, air movement is slow, or the bird's body was covered with feathers. The quantities of enzymes, nutrients, and hormones, as well as physical activity, breathing rate and weather conditions, all these factors can influence the level of heat that was generated within chickens. (Alagawany et al., 2017; El Kholy et al., 2018). In order to regulate body temperature and avoid overheating, the body releases excess heat into the environment through natural processes.