Stocking density on broiler performance

Stocking density is one of the most important poultry welfare issues that influence broiler performance. Stocking density is denoted as the number of birds per unit area or amount of area per bird. Currently, broiler chickens are generally kept in large colonies at high densities on litter with continuous lighting. It was found in research that one thousand mature birds can excrete 300 Liter water per day. It is also noted that water content of chicken faeces is around 80%. So poultry house air and litter moisture is crucial to bird health and welfare.

In Bangladesh, most of the broiler farms do not achieve yield as per recommended standard like body weight, feed consumption, feed conversion, mortality and carcass yield. This could be due to the interaction of stocking density, temperature, relative humidity and ventilation. If these parameters are not within acceptable range, they may cause thermal discomfort for the birds and affect their productivity. Chickens and their wastes in poultry houses generate different forms of air pollution, including ammonia, carbon dioxide, carbon monoxide, methane, hydrogen sulfide and nitrous oxide gases, as well as dust. These pollutants may cause risk to the health of both chickens and farm workers. Poor environments normally don't cause disease directly but they reduce the productive performances and defensive mechanism of chicken by making them more susceptible to disease. Poultry husbandry in tropical and sub tropical countries are affected by stocking density and increased temperature.

Factors to consider when determining stocking density include bird weight, rearing season, housing, ventilation system, litter, feeder space, drinker space, house dimensions etc. Stocking density 10 bird/m^2 is practiced in tropical countries. In many cases, producers compromise stocking density to achieve a satisfactory economic return. Stocking density studies usually show that modern broilers perform better when given more space, but

practically it is not possible to provide more space. However, studies are not always conclusive due to the numerous factors mentioned previously. Some studies show large benefits in reducing stocking density, while others show little or no differences. A research on stocking density and rearing season in a windowless environment at different stocking density of 12, 15, and 18 birds / m^2 in different season in Japan showed that stocking densities of 12 and 15 birds /m^2, neither sudden mortality nor total mortality was effected throughout the season. However at 18 birds /m^2, sudden mortality significantly increased in summer and winter. Irrespective of the stocking density, body weight gain and feed intake were lower in summer with no significant change in feed efficiency, but this type of housing practice is not common in Bangladesh. Here farmers use open-sided house for rearing of broilers. At higher stocking densities the birds would grow slower and reduce walking ability. At higher densities it is crucial to optimize broiler performance and welfare.

Bangladesh is a densely populated country, for this reason farm land is not so available and at the same time the value of land is increasing day by day. In this connection the small area of land which is available near urban area having economic importance should be well utilized for broiler farming. Gradual expansion of broiler production and increasing cost of construction materials, farm owners have a tendency to increase stocking densities for broiler production. However, for the reasons, mentioned above, the stocking density is an important management factor for broiler production in tropical countries like Bangladesh. Summer season is a problem for broiler rearing, as in this season environmental temperature increase throughout the country. To avoid overcrowding and unhealthy house environment broiler growers need season-wise optimum stocking density.

In good management condition a stocking density of 12 birds/m^2 fed with crumble feed is suggestive for commercial broiler production in summer and rainy seasons in Bangladesh condition up to 4wks of age. But 14 birds/m^2 also fed with crumble feed is suggestive for commercial broiler production in winter up to 4wks of age Irrespective of seasons a stocking density of 12 birds/ m^2 fed with crumble feed would be recommendable for commercial broiler production in Bangladesh. 10 birds/m^2 is riskless.