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## Effects of disease control strategies on the efficiency of chicken production in Ghana’s Bono region

DESMOND AYERTEY<sup>1</sup>, FRED ASEM<sup>1</sup>, CHARLES OKYERE<sup>1</sup>, DOLAPO ENAHORO<sup>2</sup>

<sup>1</sup>*University of Ghana - Legon, Department of Agricultural Economics and Agribusiness, Ghana*

<sup>2</sup>*International Livestock Research Institute (ILRI), Policies, Institutions and Livelihoods, Ghana*

### Abstract

Viral diseases among layer chickens threaten the incomes of small to medium-sized commercial chicken farms in Ghana. Implementing adequate biosecurity measures aids in controlling the spread of these diseases and can improve production efficiency, thus increasing farmer incomes. However, limited knowledge of biosecurity practices, high cost of chemicals, irregular veterinary visits, and negligence on the part of farmers, limit the practice of good biosecurity on farms. This study assessed the technical efficiency of the intensive housing system of layer production and the factors that influence it among small and medium-sized chicken farms in Ghana’s Bono region. A normalised Cobb-Douglas production frontier model was employed using cross-sectional data of 140 layer chicken producers in two districts (Dormaa Central and Dormaa East) of the Bono Region. Inputs variables of the empirical model included feed consumption, water consumption, vaccination and other medications, and labour (man-days), while the (number of crates of) eggs produced was defined as the output. These factors were standardised per 1,000 birds. The study found that the quantity of feed and water consumption are the most significant factors negatively and positively, respectively, affecting egg production levels. Layer producers are found to be about 73 % production efficient. Farmer’s age and one biosecurity control strategy (depopulation of birds during extreme hot weather conditions or disease outbreak) are the key factors that significantly explain variations in production efficiency. Other biosecurity factors that were mentioned and mostly practised were the use of footbath, frequent disposal of litter, routine deworming, frequent in-house cleaning, and regular veterinary visits. The results suggest that more regular visits to farms from the public veterinary service, the primary means by which the surveyed farms receive reliable information on the strategies and importance of implementing biosecurity measures, may be key to increasing efficiency levels among the farmers. Farmer education on early detection and control of viral poultry diseases, and improved access to properly formulated feeds, were also found to be important.

**Keywords:** Livelihoods, livestock, Marek disease, poultry, smallholder, technical efficiency