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Impact of Dietary Sodium Diformate on Layer Performance and Health under Farm Conditions in Nigeria

CHRISTIAN LÜCKSTÄDT

ADDCON, Germany

Abstract

Microbiological integrity of eggs is an important issue, while bacterial pathogens in feed and environment of layer units can have serious consequences for bird health and productivity, especially in tropical regions, where higher environmental temperatures and humidity allow pathogens to thrive. Organic acids have long been used in animal nutrition to stabilise feed and enhance animal performance. Early studies on these additives were carried out in pig production; however they have been increasingly adopted in the layer industry since the early 1990's. Sodium diformate (NDF) has been widely used in poultry production in tropical areas since 2009. However, its impact under layer production systems in Africa was yet to be thoroughly investigated. This formed the impetus for the current study — a commercial trial in Nigeria. Here, the impact of 0.3% dietary NDF on performance and health in laying hens from 55 weeks of age was studied over a period of eight weeks. The treatment and control groups (1050 birds per group) each received a commercial layer diet throughout the trial. Feed intake over the trial period was lower in the birds that received the NDF diet (119 v. 122 g per bird and day; $p < 0.001$), while hen day egg production improved over the same period (85.9 v. 77.7% in NDF and control groups, respectively; $p < 0.001$). The average number of eggs laid over the experimental period was 57,518 in the group given the NDF diet, compared to only 51,047 in the control group ($p < 0.001$). At the end of the trial, total egg weight was 3510 kg in the NDF group, compared to 2910 kg in the controls, although due to the collection method, no statistical comparison was possible. Finally, the use of the additive led to reduced mortality (0.7 v. 3.8% in the NDF and control groups, respectively; $p < 0.001$). These data show that sodium diformate (traded as Formi NDF) is able to improve performance and survival rates in layers under commercial tropical conditions in Nigeria and may thus be a viable alternative for antibiotic inclusion in feed.

Keywords: Dietary sodium diformate, layers, Nigeria, organic acids