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Factors Influencing the Choice of Genetic Stocks for Commercial Layers' Production in the Humid Tropics

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Abstract

The performance of commercial layers can be viewed simply as the sum of its genotype and the effect of the environment with which it is associated. However, in the humid tropics, the pattern by which different layer strains respond to a shift in the environment, management and husbandry practices often changes drastically. Evidence of detrimental effects of environment and the interaction between layer strains and environment on rate of egg production, egg weight, feed intake, feed efficiency, livability, body weight and many other traits of economic importance for the layer industry need to be reviewed.

Hot and humid conditions decrease the difference between ambient temperature and the average temperature of the body surface, reducing the rate at which metabolic heat can be dissipated in commercial layers. Hot conditions can be avoided with good nutritional strategies, management practices and with modern layers houses equipped with efficient cooling and ventilation systems. However, the global commercial layer industry continues to expand to hot-climate developing countries where climatic control of layer houses is limited due to high installation and operational costs and an unreliable supply of electricity. Hence, breeding heat-tolerant layers may offer a sustainable approach to mitigate the negative effects of heat on commercial layer production. Breeding for adaptation to a specific stressful environment is the strategy of choice when GxE interaction affects economically important traits. In tropical countries where commercial layer producers cannot afford costly cooling and ventilation, it would be better to select under the prevailing or varying conditions where the laying birds are to be used.

The results showed that different preferences observed among thirty five commercial layer farms in these studies using seven key egg-stock traits may be attributed to the differences in the performance gains,disease resistance and the extent of heat tolerance.

In conclusion, while there is little data available that actually compare production systems; taking into account all environmental, breeding and production costs, it is established that the choice of commercial layer production stocks depends on their production gains, capability to adapt to their environments and even contribute to environmental sustainability in order to achieve performance objectives.

Keywords: Commercial layers, genetic stocks, humid tropics

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