

## Restricting the Intake of a Cereal-Based Feed in Free-Range-Pastured Poultry: Effects on Performance and Meat Quality

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**ABSTRACT** Pastures are assumed to be good sources of  $\alpha$ -linolenic acid (ALA) and other bioactive compounds. In this study, we evaluated the effects of restricting the intake of a cereal-based feed on the consumption of a legume-based pasture, and consequently on poultry performance and meat quality. Broilers of the RedBro Cou Nu  $\times$  RedBro M genotype were fed a cereal-based feed at different intake restriction levels (100, 75, or 50% of ad libitum intake) in portable floorless pens located on a subterranean clover (*Trifolium subterraneum*) pasture. Control birds were maintained at the same site in identical pens but had no access to pasture. The results revealed that, although the growth rate achieved was below the levels expected for the genotype, restriction of cereal-based feed intake had a significant impact on broiler weight gain and feed conversion while leading to an increase in relative leguminous pasture intake (from 1.6 to 4.9% of the total intake, on a DM basis). In addition, bird performance was positively influenced by pasture consumption.

The capacity of ingested pasture to modulate carcass characteristics, broiler meat fatty acid profiles, and the meat content of total cholesterol, tocopherols, and tocotrienols was investigated in broiler chickens slaughtered on d 64. Pasture intake decreased carcass yield ( $P < 0.05$ ) and meat pH ( $P < 0.001$ ) and improved breast skin pigmentation ( $P < 0.001$ ). Consumption of the leguminous pasture had a marginal effect in the vitamin E profiles and cholesterol contents of broiler meat ( $P < 0.05$ ), although it significantly affected the meat fatty acid profile. Although pasture intake did not influence the linoleic acid content of poultry meat, the levels of n-3 polyunsaturated fatty acids in breast meat [ALA ( $P < 0.001$ ), eicosapentaenoic acid ( $P < 0.001$ ), docosapentaenoic acid ( $P < 0.001$ ), and docosahexaenoic acid ( $P < 0.001$ )] were significantly greater in birds consuming the leguminous biomass. Overall, the data suggest an important deposition of ALA and some conversion of ALA to its derivatives in pastured broilers subjected to a restriction of cereal-based feed.

**Key words:** feed restriction, pasture intake, broiler performance, fatty acid profile

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