

An Historical Overview on Turkey Skeletal Research

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For a 20 year period from 1970 to 1990, there was a doubling in percapita consumption of turkey from 8.1 to 17.6 lbs which was in response to an increase in consumer demand for lean and healthy meat products. This had a two-fold effect on the turkey industry. It increased the demand for and emphasis on the importance of deboned breast meat and shifted the pattern of yearly turkey consumption from the annual peak in seasonal “whole birds” for Thanksgiving to primarily breast meat products marketed year-round. The competing beef and pork industries responded by changing the “nutritional” characteristics of their products along with shifts in marketing strategies (Dougherty, 1987). The 20 yearly annual increases in turkey consumption reached a plateau at approximately 17 lbs/years which has not changed appreciably for the last 30 years. This suggests that the industry needs an infusion of new products with ground turkey (replacing ground beef) and convenience foods (i.e. pre-cooked products) being possibilities according to the Agricultural Marketing Resource Center at Iowa State University (www.agmrc.org).

One of the ongoing challenges for the commercial turkey industry over the last 50 years has been the imbalance between the tremendous genetic progress in growth associated traits and concomitant challenges with both structural “leg weakness” and skeletal health challenges. The National Turkey Federation (NTF) sponsored a symposium at Iowa State University in 1971 on “Leg Weakness in Turkeys” and the “cost” of leg weakness was attributed primarily to carcass downgrades and mortality (Anonymous, 1971). Sullivan (1994) estimated a yearly cost to the

turkey industry of \$ 32- 40 million in his introduction to a symposium on skeletal health at the Poultry Science Association annual meeting.

Over the last 20 years, citations from the literature which discuss turkey performance within the context of genetic progress, breast yield, and/or skeletal growth often preclude the early foundational literature. The 1930's and 1940's was an active research era that addressed the part-whole relationship between selected aspects of linear skeletal growth and whole body/carcass development in meat strains of poultry. These early studies provided the biological insights and statistical approaches from which commercial turkey breeding programs were initially developed. The primary goal of this report is to review the early and more recent literature on skeletal growth in commercial turkeys along with some discussion on different factors which contribute to the skeletal problems which currently exist in the industry.