

BIOLOGY TEXTS

Short Written Texts (Journals)

Zuidhof, M.J., Schneider, B.L., Carney, V.L., Korver, D.R. and Robinson, F.E. 'Growth, efficiency, and yield of commercial broilers from 1957, 1978, and 2005'. *Poultry Science* 93:1-13 (August 19, 2014). Extracts from p. 1.



From 1957 to 2005, broiler growth increased by over 400%, with a concurrent 50% reduction in feed conversion ratio, corresponding to a compound annual rate of increase in 42 d live BW of 3.30%. Forty-two-day FCR decreased by 2.55% each year over the same 48-yr period. Pectoralis major growth potential increased, whereas abdominal fat decreased due to genetic selection pressure over the same time period. From 1957 to 2005, pectoralis minor yield at 42 d of age was 30% higher in males and 37% higher in females; pectoralis major yield increased by 79% in males and 85% in females.

INTRODUCTION

A profound change in the productivity of the broiler chicken industry has been achieved via intentional genetic selection through traditional quantitative techniques (Hunton, 2006). Between 1960 and 2004, the US consumer price index for poultry products increased at half the rate of all other products (USDA, Economic Research Service, 2004), due to improvements in growth and efficiency. This has likely been a major factor contributing to higher per capita consumption of chicken meat between 1950 (9.4 kg) and 2005 (39.2 kg; USDA, Economic Research Service, 2014). Early on, limited statistical capabilities forced geneticists to focus on economically important parameters that were easily measured and highly heritable, such as BW, feed consumption, feed conversion ratio (**FCR**), and yield (Hunton, 2006). In response to changing consumer demands, product development has driven genetic selection, with concomitant unintended effects, including increased skeletal defects (Lilburn, 1994; Rath et al., 2000), metabolic disorders (Scheele, 1997; Olkowski, 2007), and altered immune function (Cheema et al., 2003). In 1962, 83% of broilers were marketed as whole birds, 15% as cut-up or parts, and 2% as further processed products (National Chicken Council, 2011). In 2005 only 11% of broilers were marketed as whole birds, 43% as cut-up or parts, and 46% as further processed products (National Chicken Council, 2011). As statistical capabilities expanded, more balanced selection programs became achievable (Emmerson, 1997).

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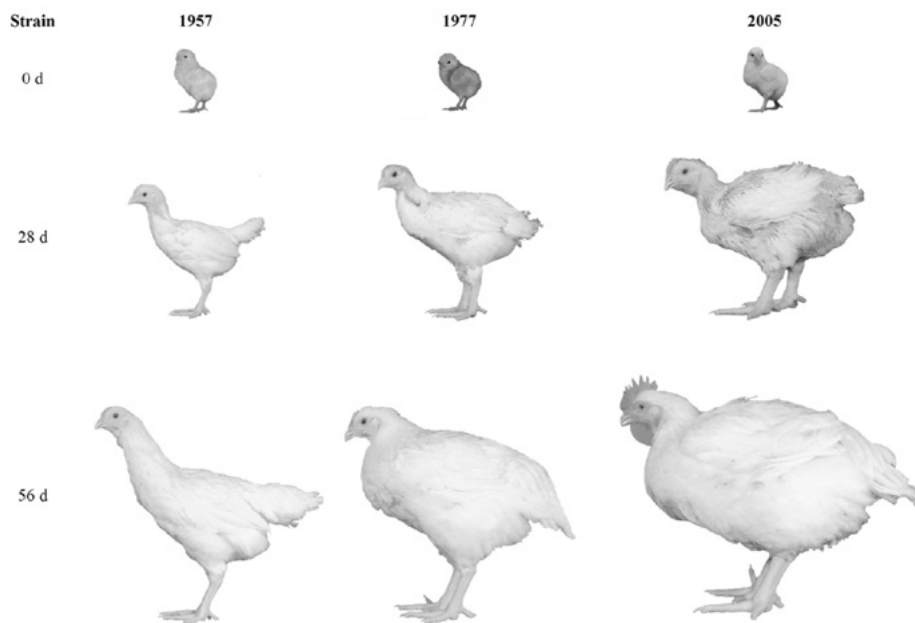


Figure 3. Age-related changes in size of University of Alberta Meat Control strains unselected since 1957 and 1978, and Ross 308 broilers (2005). Within each strain, side profile images are of the same bird at 0, 28, and 56 d of age. Color version available in the online PDF.

Growth rate and efficiency (Sherwood, 1977; Marks, 1979; Chambers et al., 1981; Havenstein et al., 1994a, 2003b), and changes in the yield of specific, economically important portions (Chambers et al., 1981; Havenstein et al., 1994b, 2003a) have increased dramatically since the 1940s. Although some of these changes are due to environmental factors, 85 to 90% has been attributed to genetics (Sherwood, 1977; Havenstein et al., 1994a,b, 2003a,b).