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THE EFFECT OF GENOTYPES AND HOUSING CONDITIONS ON COLOUR OF CHICKEN MEAT

AIMS

In the past decades, demand for high quality poultry meat produced by environmentally friendly production technologies increased in the developed countries. On the basis of this need, alternative poultry breeding technologies (free range and organic) have been developed. The alternative keeping systems and the almost double breeding period may obviously affect the colour of poultry meat (compared with intensive rearing). The aim of this study was to compare the colour of valuable meat parts (breast, thigh) for Yellow Hungarian, Yellow Hungarian cross with different meat type cocks (S77, Foxy Chick, Redbro, Hubbard Flex, Shaver Farm) and Ross 308.

MATERIALS AND METHODS

The experiment consisted of 7 genotypes, such as pure bred chickens, Hungarian Yellow pullets crossed with S 77, Foxy Chick, Redbro, Hubbard Flex and Shaver Farm meat-type cocks and Ross 308 commercial broiler chickens. Cross-bred hybrids and Hungarian Yellow chickens were reared under free-range conditions for 84 days and Ross 308 chickens were industrially bred for 42 days. The instrumental colour measurement of the breast and thigh meat was carried out using a Minolta CR-300. During measurement the lightness (L^*), redness (a^*), yellowness (b^*) values of the meat were measured for the breast samples on 6 different locations each, on the thigh samples on 12 locations each, and on the basis of the latter two parameters the roma value (C^*) indicating the brightness and the density of the colour was calculated. Moreover the colour difference values were calculated at the breast and thigh meat for the genotypes examined. Based on the colour difference values it could be established to what extent the variations experienced in the measured parameters (lightness, redness, yellowness) between the different genotypes could be perceived by human vision.

RESULTS AND DISCUSSION

The results showed that the genotype and the keeping technology influence the colour of breast and thigh meat: the L^* , a^* and b^* values were significantly lower for Ross 308 broilers than chickens fattened free-range (51,93 vs. 58,67; 1,99 vs. 3,10; 3,72 vs. 5,17) (Figure 1, 2). For the different genotypes as opposed to the breast meat smaller variance was measured for the parameters qualifying the colour of the thigh meat (lightness: 54,00 vs. 53,26; redness: 10,34 vs. 11,03; yellowness: 7,60 vs. 7,26) (Figure 3, 4). The colour difference values showed that compared to the other genotypes the breast meat of Ross 308 broilers and purebred Yellow Hungarian in mixed sexes differed well visibly and to a large extent, moreover between the crossed genotypes there was a well visible variation. The colour difference values of the thigh meat samples were smaller compared to that of the breast meat.

Figure 1

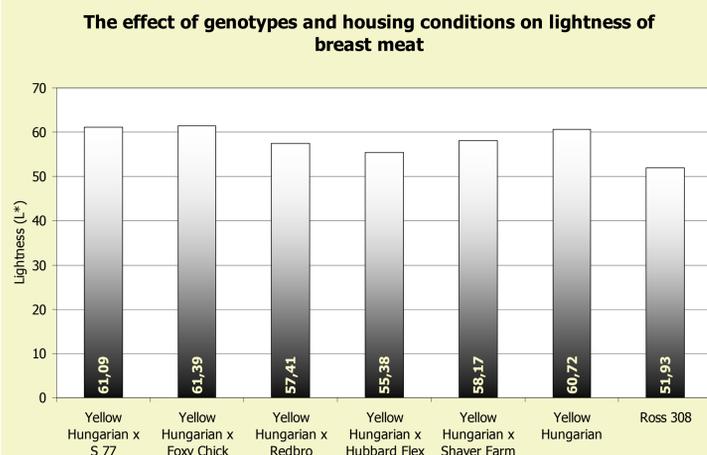
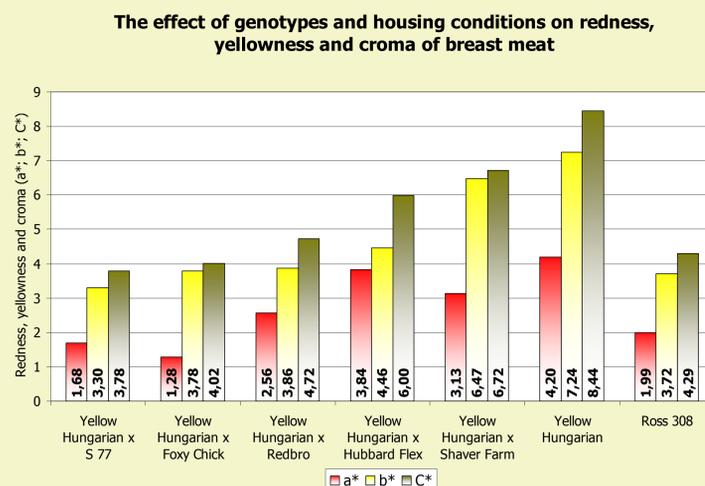


Figure 2



Yellow Hungarian chickens



Figure 3

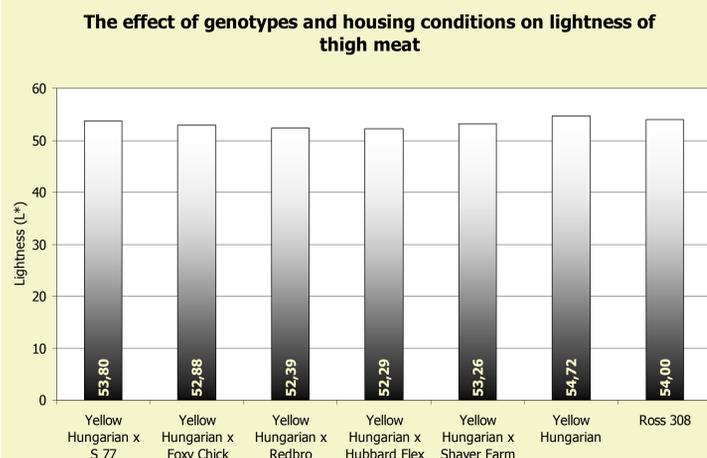
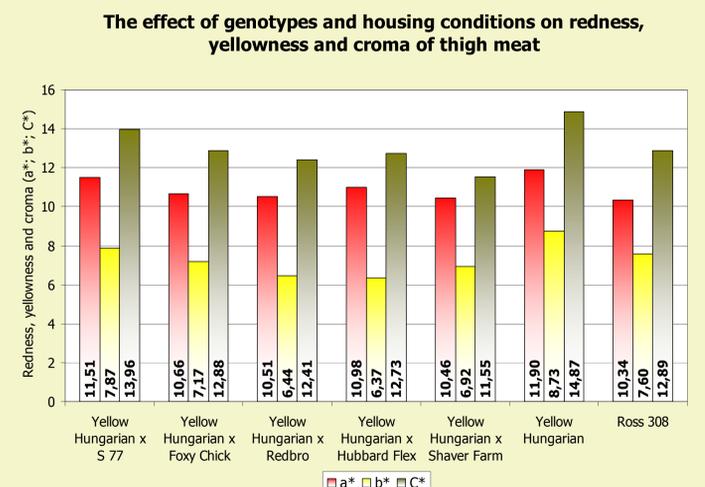


Figure 4



Yellow Hungarian cock

