ABSTRACT

Several experiments were carried out in the greenhouse and in the field, to study the inheritance of tomato fruit colour in populations of four tomato lines under lowland tropical climatic conditions. The intensity of colour in the ripe fruit was quantitatively inherited. The calculated minimum numbers of active gene pairs were very low. Heritability in the broad sense on arithmetic scale was 57.1%, 71.7% and 71.9% for crosses involving lines 1, 2 and 3 crossed with a common line 4 respectively. Heterosis for intensity of colour was observed in the F_1. Red fruit colour was dominant to pink and monogenic. The skin colour was controlled by a single gene pair and yellow colour was dominant to clear. All fruits lacking the yellow colouring in the skin were phenotypically pink. In the green fruit, dark green shoulder was dominant to uniform green. Visual colour assessment was a satisfactory method of discerning differences between fruit colour intensities.

Fruit shape and size were quantitatively inherited. Dominance was partial for small fruit size and round fruit shape. Genes controlling size acted on a multiplicative scale. There was no significant correlation between colour and shape or size of the fruits.

Temperature affected the development of lycopene in fruits harvested at the mature green stage. Fruits developed most intense colour at 21°C and remained yellow at 32°C. When temperatures were alternated between 21°C and 30°C, fruits developed more lycopene than at constant 30°C. Recommendations for programmes designed to breed tomatoes for colour improvement were made.