

Abstract

Ripening behaviours of fruit from the paprika pepper were studied. Fruit were either allowed to ripen on the plant or harvested at three different ripeness stages: light green, deep green and breaker. Several parameters including internal carbon dioxide (CO_2) and ethylene (C_2H_4) concentration, extractable colour, soluble solid content, 1-amino-1-carboxylic acid (ACC) oxidase and synthase activity, were determined. CO_2 concentration ranged from 3.99 mL.L^{-1} to 80.38 mL.L^{-1} while C_2H_4 concentration fluctuated from 0 to $0.1854 \mu\text{L.L}^{-1}$. The change of both CO_2 and C_2H_4 concentration of fruit ripened on the plant show a climacteric-like pattern with a peak observed when fruit turned totally red. Fruit ripened off the plant had declining and relatively low concentrations of CO_2 and only a small peak of C_2H_4 immediately after harvest that may be wound-triggered ethylene. Extractable colour from fruits harvested at light or deep green stages failed to reach the acceptable level of 180 units for powder processing and the low level of the soluble solid content (SSB) of these fruit may contribute to the failure of carotenoid synthesis during ripening. The change in ACC oxidase activity of fresh tissue showed little correlation with the change in ethylene while ACC synthase activity, which remained at relatively low levels at the beginning of ripening, increased at the end, especially with fruit ripened on the plant or harvested at breaker. In general, paprika fruit exhibited climacteric characteristics when ripened on the plant and nonclimacteric ones when ripened off the plant.