Abstract

The thesis summarizes and discusses results of studies on factors that affect composition and postharvest behaviour of parthenocarpic greenhouse cucumbers. The pattern of fruit growth and its effect on fruit age at harvest were studied, as was the effect of an extended lag phase after anthesis on composition and post-harvest behaviour of cucumbers. Changes in cucumbers left to ripen on the plants were compared with changes in detached fruits during storage. Influence of stage of development at harvest and position on the plant on post-harvest behaviour as well as the effect of light during storage were studied. In addition, the level of polyamines during growth and ripening on the plant was determined.

The results showed a pattern of dominance and inhibition during fruit growth, resulting in a great variation in number of days required to reach commercial size. However, an extended lag phase after anthesis, before fruit growth, did not affect composition of fruits or limit shelf-life. In all cucumbers studied, whether left to ripen on the plants or detached and stored, chlorophyll was lost from the peel, the content of citric acid and electrolyte leakage increased and content of malic acid and glucose decreased, but the time course for these changes varied. The results indicate that degreening is independent of both citric acid accumulation and hexose metabolism and that changes in hexose content during storage mainly is attributable to respiration losses. The results also indicate that stage of development influences the rate of post-harvest changes and that fruits from the lateral shoots reach marketable size at an earlier stage of development than main stem fruits. Light at an intensity of 56 mol/m^2/s during storage increased both degreening and maturation of fruits.